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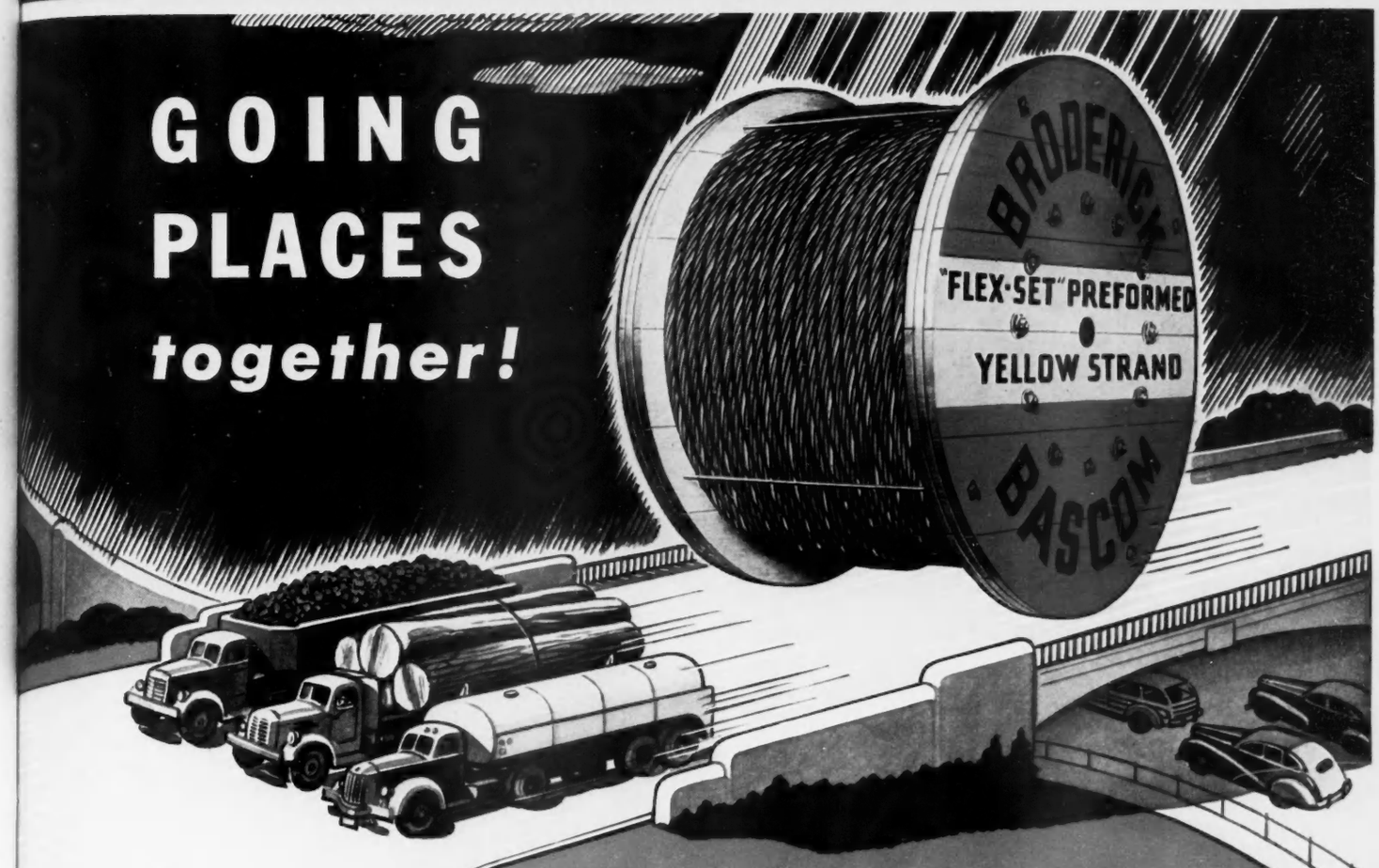
The OIL WEEKLY

FOR THE DRILLING, PRODUCING, PIPE LINE INDUSTRY



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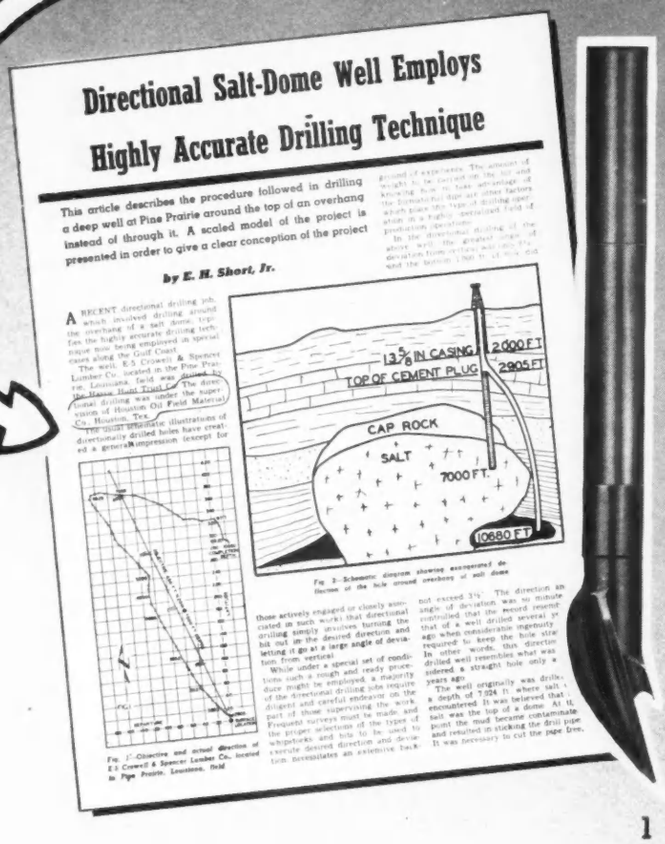
The directional drilling was under the supervision of Houston Oil Field Material Co., Houston, Tex.



Directional Salt-Dome Well Employs Highly Accurate Drilling Technique

This article describes the procedure followed in drilling a deep well at Pine Prairie around the top of an overhang instead of through it. A scaled model of the project is presented in order to give a clear conception of the project

by E. H. Short, Jr.

A RECENT directional drilling job, the which involved drilling around fes the highly accurate drilling tech- nique now being employed in special cases along the Gulf Coast.

The well, E-5 Crowell & Spencer Lumber Co., located in the Pine Prai- rie, Louisiana, field was drilled by the Hayes Hunt Tool Co. The direc- tional drilling was under the super- vision of Houston Oil Field Material Co., Houston, Tex.

For most effective illustrations of directionally drilled holes have creat- ed a general impression (except for

Fig. 1—Objective and actual direction of E-5 Crowell & Spencer Lumber Co., located in Pine Prairie, Louisiana, field

Fig. 2—Schematic diagram showing exaggerated de- flection of the hole around overhang of salt dome

Those actively engaged or closely asso- ciated in such work) that directional drilling simply involves turning the bit out in the desired direction and setting it go at a large angle of devia- tion from vertical.

While under a special set of condi- tions such a rough and ready proce- dure might be employed, a majority of the directional drilling jobs require diligent and careful endeavor on the part of those supervising the work. Frequent surveys must be made and the proper selection of the types of whipstocks and bits to be used to exercise desired direction and devia- tion necessitates an extensive back-

ground of experience. The amount of weight to be carried on the bit and knowing how to take advantage of the formation's dip are other factors which make this type of drilling open only in a highly specialized field of production operations.

In the directional drilling of the above well the greatest angle of deviation from vertical was only 3½ degrees and the bottom 1,000 ft. of hole was not exceed 3½°. The direction an angle of deviation was so minute controlled that the record resemb that of a well drilled several ye ago when considerable ingenuity required to keep the hole stra In other words, this directio drilled well resembles what was sidered a straight hole only a years ago.

The well originally was drille a depth of 7,024 ft. where salt encountered. It was believed that salt was the top of a dome. At th point the mud became contaminate and resulted in sticking the drill pipe. It was necessary to cut the pipe free.

Four good reasons for successful directional drilling jobs: (1) HOMCO'S Deflector Spud Bit, (2) Deflector Tool, (3) Sperry-Sun MMO Non-Magnetic Orienting Sub and, (4) the K-K Whipstock and Retrieving Sub. The fifth reason not shown is experienced engineering supervision.

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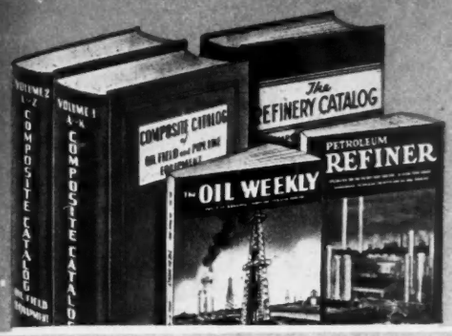

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Looking Ahead WITH THE EDITOR

THE saying, "Gold is where you find it" equally applies to oil, and there is an increasing number of new fields being found in areas where living conditions are inconvenient and form a hardship on the exploration crews, and where the terrain makes transportation difficult.

Bridging the gap from the highways and railroads of common travel to the extended areas of oil exploitation brings many unusual engineering problems. The transportation problem in any of the far-reaching regions where the quest for oil is in progress requires a different solution for each case. A composite of all the problems encountered in one area or another may be found within the Gulf Coast region of Louisiana where the hazards of transportation add to the problems of deep well drilling.

One major company operating in the bayou country of Louisiana has developed a unique method for transporting men and supplies from the highway's end to the derrick floor during all seasons of the year. This method, employing vehicles, railway cars and boats is the subject of Staff Writer Gordon B. Nicholson's article, "Atchafalaya Transport Unique in Oil Fields," to appear in the April 22 issue of THE OIL WEEKLY.

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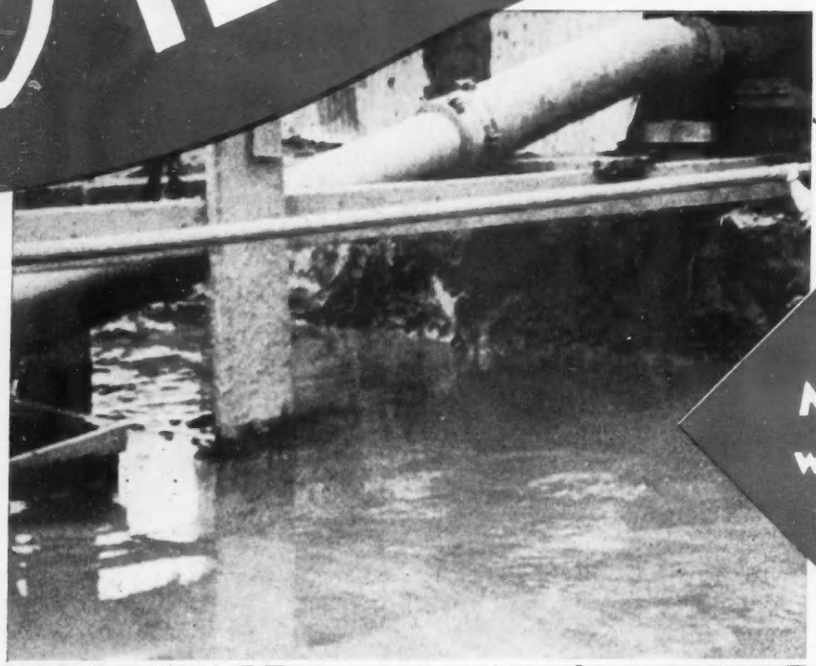

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An Industrialist's Words of Wisdom

WITH no attempt to gild his field of lilies, THE OIL WEEKLY herewith presents excerpts from an address given recently before Monsanto Chemical Company stockholders by Edgar M. Queeny, board chairman.

"Production has ever been the only antidote for inflation. I am certain that if OPA and its kindred agencies were abolished now, price levels a few years from now would be lower than I fear they are going to be . . .

"From Bureau of Labor statistics, one gleans that in 24 non-war industries decreased efficiency, coupled with increased wages, raised 1944 labor costs 50 percent over 1941 . . . A similar trend in Britain has denatured that nation's keystone coal industry . . .

"We are living in an economic anarchy. We are no longer governed by laws of supply and demand; they have been proscribed and have gone underground, into black markets. And the void has not been filled by subsidies, priorities and directives, ceilings and floors.

"Those who proposed to avoid inflation by managing our economy avoid history, and for good reason. It is replete with records of similar attempts and their disastrous failures."

Thus Queeny adds his voice to those who would help lead a nation out of the wilderness.

Removal of All OPA Oil Control Sought

AS VERY well stated by the Oil Producers Agency of California, the new prices made possible by an increase of 10 cents a barrel allowed by Washington and posted by most buyers, "will not influence the oil industry in its current drive to remove ALL OPA control over oil prices, on the OPA's own stated policy that when supply equals demand, controls should be dropped . . .

"The industry maintains that the 10-cent increase in ceiling prices for crude is completely unrealistic in that it takes no account of the replacement cost of oil being produced. J. H. Reppert, assistant chief of the Fuel Price Branch of OPA, recently stated that OPA was not concerned with replacement costs but only in the oil industry's present earnings compared with those of the 1936-39 base period, which makes it abundantly clear that in a blind effort to control prices, OPA is willing to jeopardize the welfare of the nation, so dependent upon plentiful future supplies of oil."

Cold Starting Fuel Fills a Long Need

PROBLEMS involved in starting aircraft engines in sub-zero temperatures have long troubled the aviation industry. In sub-zero weather, aviation gasolines will not start aircraft engines. Elaborate and cumbersome preheating equipment became necessary during the war for all Canadian, Alaskan, and other sub-Arctic operations, and this equipment took as long as six hours to get an engine in operation.

The Texas Company has a newly developed cold starting fuel for aircraft operation. It is said that experiments with the fuel thus far have proved so successful that the U. S. Army Air Forces have requested large quantities of this special fuel to be shipped to Alaska for an elaborate series of winterization tests which are being conducted there this winter.

Aside from the tremendous value for military operations, development of cold starting fuels will prove invaluable for all transpolar and bush flying, and feeder lines operating in all extremely cold climates.

Russia and Iran Make Agreement on Oil

RUSSIA undoubtedly scored a gain when it managed for a Middle East agreement whereby a Russo-Iranian oil company will be formed and owned 51 percent by the Soviet Union. Just what section of Iran will be involved is not known except generally it is thought to include "the northern" part. Both Anglo-Iranian Oil Co., Ltd., and interested American companies felt last week that the areas in which they now operate would not be trespassed by the new concession to Russia.

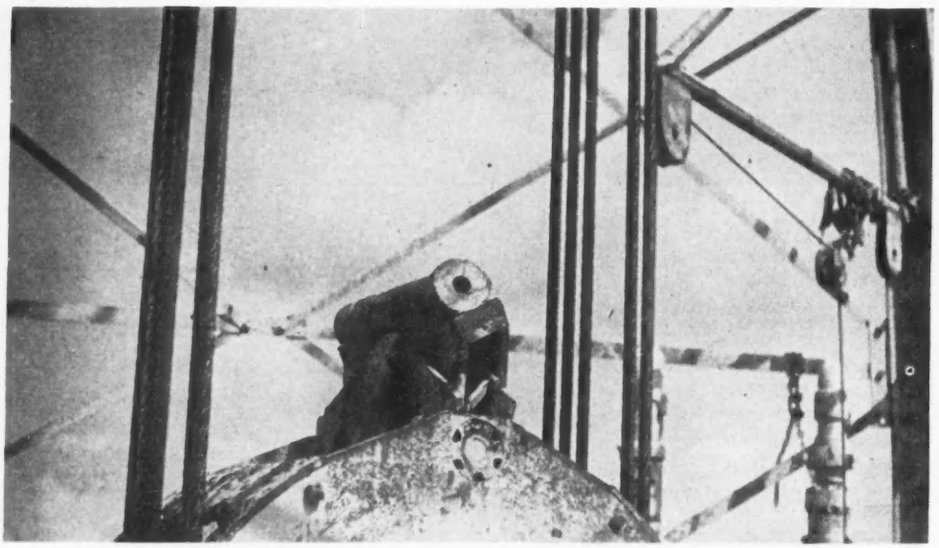
Moscow's sketchy announcement said that 51-49 percent split ownership would obtain during the first 25 years of the pact's existence and that profits will be divided in proportion to the number of shares held by each side.

This agreement differs somewhat with that which governs Anglo-Iranian's operations and which was signed in 1932. This covers some 100 million acres in Southwestern Iran and runs for 60 years. The company pays annually a sum equivalent to 20 percent of its dividends on ordinary shares above 671,250 pounds sterling. It also pays royalties of 4 shillings per ton on products sold and exported and, instead of taxes, a tariff of 9 pence per ton on the first 6 million tons and 6 pence thereafter for the first 15 years of the concession. Then this tariff is increased to 1 shilling and 9 pence, respectively. Total of annual payments cannot run less than 1,050,000 pounds.

Anglo-Iranian oil is owned 52.55 percent by the British government, 26.3 percent by Burmah Oil Company (owned by British and Dutch Shell) and the remainder by individuals. In the Russian agreement dealings are between the governments of the two nations.

It is to be hoped that "adequate" oil is found in the area covered by the agreement. Otherwise, the Russian bear might again go "on the loose."

Two Blocks *run into the crown!*



CASE HISTORY NO. 13

In a very deep Gulf Coast well, running drill pipe at night, the driller ran his Traveling Block into the crown. The wreck so badly damaged the crown block that it had to be returned to the factory. Time was lost and serious injury to the crew was narrowly avoided. Total cost, $5,000.00. Luckily no lives were lost. No pictures were available.

CASE HISTORY NO. 14

The above picture illustrates the second case. Here, a Patterson-Ballagh Traveling Block Bumper had been installed before the crash occurred. A short time after the installation, the block was run into the crown. Result: no damage was done except to the bumper rubber which was quickly and easily replaced. No drilling time was lost, the crew and rig were protected.

The Traveling Block Bumper is one item the Patterson-Ballagh man sells you which he hopes you will never have to use. Like insurance, you need the Bumper before the accident happens. But what other insurance can you buy for two or three hundred dollars that's paid up for life, and will pay off 5, 10 or 15 thousand dollars and never wear out, barring a crash (and it surely will bar the crash). Call your Patterson-Ballagh man and be fully protected today.

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The Week's News

PRICING problems continued to plague the industry last week as OPA deferred action on a recommendation to suspend ceilings on oil field equipment, ostensibly that it might obtain additional information as to how greatly prices would increase if controls were lifted. OPA denied reported plans for part decontrol of the industry. (See below.) Congressional opinion of OPA policies will be voiced this week during House debate on price-control extension. Abolition of the agency without further delay was demanded by Sun Oil Company's J. Howard Pew.

Antitrust Funds Sliced—Congressional impatience with the Justice Department's anti-monopoly drive was manifested in refusal of the House Appropriations Committee to give the antitrust division a requested increase in funds and a tart suggestion that it quit harassing business. Page 30.

Research Bill Snagged—The highly controversial federal science bill finally emerged from committee in the shape of a measure which, sponsors say, assures the protection of industrial and private inventions. There is little likelihood, however, that the bill will get through congress this year. Page 28.

Foreign Issues—While officials watched with interest the maneuvers in the United Nations security conference over the question of Iran, the suggestion was made that Russia be asked to supply this country with strategic raw materials, possibly including oil, in return for the proposed billion dollar loan the Soviet is seeking. The State Department was informed by the Polish provisional government that it could not discuss reimbursement of American owners of properties seized in the nationalization of Polish industry until the expropriations had been completed (page 74) and a demand was made that Washington abandon its effort to reform Argentina before American export trade in oil-field equipment and other important goods was lost to England. Page. 30.

Navy and Texas Oil—PAW disclosed that Deputy Administrator Davies had made unsuccessful efforts to induce the Texas Railroad Commission to increase allowables to insure needed supplies of Navy fuel. Production days were increased by three in Texas to give the Navy the additional oil it needs. Page 29.

Yes and No on Co-ops—In a mugwump report, the House Small Business Committee held that farmer cooperatives really have no tax advantage over other forms of business, then recommended that they be required to limit their activities to the handling of farm production supplies. In one paragraph the committee said the co-ops are a successful means of combating monopoly, in another that their degree participation in the national volume of business is so small as to be negligible. Page 27.

PAW Finale Soon—All PAW committees in the five districts were ordered to disband by April 30, paving the way for the final locking of PAW's doors. Page 26.

Texas-California Gas Hearing—Los Angeles was the scene of a second hearing on the proposed natural gas line from Texas to California. Data on Texas reserves, source of supply of the two distributing companies, were given with no apparent points of opposition by FPC as sessions were continued until this week. Pages 30 and 72.

API Session on Coast—M. W. Morris was named chairman of API Pacific Coast District. Senator E. F. Moore strikes at federal effort to gain control of petroleum. Page 31.

FPC Gas Hearing—Other "coal" states expressed views opposing federal control of gas at Charleston, West Va., where "field" hearings of FPC were concluded. Page 28.

Shallow and Deep Oil—Oklahoma reports finding a saturated oil sand at less than 100-foot depth. Page 75. World's deepest producer completed in Louisiana. Page 26.

Compact Meeting—Twenty-one states represented at spring meeting of Interstate Oil Compact Commission meeting held last week in Tulsa. Page 27

Canada Takes Control of Wartime Oil Properties

The Washington and Ottawa governments last week entered into an agreement for the disposition of defense facilities and equipment provided in Canada by the United States during the war, under which the Canadian government will pay $12,000,000 for property which had an original cost of $59,000,000.

Included in the projects and materials which Canada will take over under the agreement are the Standard Oil Housing Area and office building estimated to have cost $4,706,841 when the Canol project was undertaken; the Whitehorse headquarters costing $4,976,833; shops, equipment and supplies at Whitehorse costing $4,387,211; and petroleum products estimated at $1,314,100.

Part Decontrol Plans Denied

Industry reports that OPA was prepared almost immediately to suspend ceilings on gasoline and lubricants only, while retaining those on other oils until supplies move in adequate volume, were denied at the week-end by OPA officials in Washington.

Declaring flatly that piecemeal decontrol was not under consideration, a spokesman for OPA disclosed that it is planned to appoint a lubricants committee, more extensive than that with which a meeting was held in Chicago April 8, at which time decontrol was not considered, to advise regarding the suspension of ceilings on lube oils. The first meeting of that committee is tentatively scheduled for the first week in May. OPA officials indicated that they did not favor selective price suspension for the oil industry and would prefer to release all petroleum products at one time, believing that to do so would result in less radical changes in refinery procedures.

The fact that the agency is just now setting up a lubricants committee and will not meet with it until next month was seen by observers as indicating that oil might not be released from control until well after May 15, although the subject has been under consideration for several weeks already.

Equipment Price Decision Expected Soon from OPA

Failure of OPA to include oilfield equipment in the capital goods classifications on which price ceilings were suspended last week means delay but not necessarily rejection of the industry's plea for relief.

OPA officials explained that action on oilfield equipment was held up in order that they might get the views of equipment manufacturers and oil producers as to how far prices might advance if controls are taken off.

It is believed that if price ceilings are suspended the subsequent rise, while substantial, probably would not be excessive, but OPA officials said they felt they should get an idea of "what might happen price-wise" before taking action.

Reports that the decision to suspend the ceilings was due to Navy representations opposing any action until the Navy gets all the fuel oil it needs were denied in OPA, where it was said the Navy situation, as well as the crude-price increase and many other phases of the situation had been discussed in connection with oilfield equipment. The Navy's dilemma is serious, it was said, but offi-

cials saw no direct connection between that and the price of equipment.

Suspension of price ceilings is being handled by a special decontrol section which has been set up in OPA, and there has been some suggestion that action on oil field equipment should be taken at the same time as action suspending ceilings on crude oil and products. However, it is not believed that the equipment manufacturers will be required to wait until a decision is reached on oil, and officials were confident that the question of equipment price suspension will be settled one way or the other this week or next.

PAW Chairman Thanked and Told to Close Up April 30

Deputy Administrator Davies last week called upon the chairman of the five district general committees and the chairman of the five functional committees in each district to disband their organization in anticipation of the dissolution of PAW at the close of this month.

He instructed that all committees and subsidiary groups discontinue all operations as of April 30, other than the orderly liquidation of such administrative affairs as may remain to be cleaned up.

In his letters, Davies expressed his personal appreciation of the part each committee member has played in the fulfillment of the war program.

Davies' instructions and thanks for services rendered were sent to the following committee chairmen:

District 1: W. A. Jones, general committee; R. H. Cooley, refining; S. B. Eckert, distribution and marketing; B. I. Graves, supply and transportation; Walter S. Hallanan, production; J. French Robinson, natural gas and natural gasoline.

District 2: O. D. Donnell, general committee; K. S. Adams, production; Burt R. Bay, natural gas and natural gasoline; Paul G. Blazer, refining; B. L. Majewski, distribution and marketing; A. W. Peake, supply and transportation.

District 3: Charles F. Roeser, general committee; George A. Hill, Jr., production; J. Sayles Leach, distribution and marketing; N. C. McGowen, natural gas and natural gasoline; John W. Newton, refining; H. C. Wiess, supply and transportation.

District 4: W. H. Ferguson, general committee; Robert W. Hendee, natural gas and natural gasoline; J. A. Lentz, distribution and marketing; Henry D. Moyle, refining; Burton W. Musser, supply and transportation; R. S. Shannon, production.

District 5: William F. Humphrey, general committee; C. S. Beesemyer, distribution and marketing; C. S. Jones, supply and transportation; William Moeller, natural gas and natural gasoline; E. E. Pyles, production; W. L. Stewart, refining.

PAW will make a final report on its operations to the petroleum group of the House Interstate Commerce Committee April 16.

Lubricants Advisory Group Is Named to Assist OPA

Appointment of eight oil company executives as members of a National Lubricants Industry Advisory Committee to assist the OPA on price ceiling problems was announced following an organization meeting of the committee in Chicago April 8.

R. B. Ogden, Socony-Vacuum Oil Company, New York, was elected chairman of the group; James Norris, Refiners Market Company, Los Angeles, vice chairman, and James R. Taylor, W. H. Barber Company, Chicago, secretary-treasurer.

Other members of the committee are Victor Benson Pennzoil Company, Oil City Penn.; Marshall McArthur, Quaker Petroleum Company, Omaha; Harry Moir, The Pure Oil Company, Chicago; J. A. Bornmann, Elk Refining Company, Charleston, West Va., and Walter Smith, Tidewater Associated Oil Company, San Francisco.

Patman Asks for Price Control Lifting on Oil

In a letter to Reconversion Director John W. Snyder April 11, Representative Wright Patman of Texas asked immediate lifting of price control, pointing out that the Texas Railroad Commission had authorized an unconditional increase of 200,000 barrels daily in April production.

"This action removes the last possible argument against the immediate lifting of price controls on crude oil and refined products," Patman asserted.

"I feel that this action now assures us ample supplies of crude oil. I further feel that any partial decontrol action which would not cover the entire field of oil and oil products would not provide a satisfactory solution."

A step toward ending oil price controls was taken when the House Banking and Currency Committee approved an amendment declaring it to be the responsibility of the President to remove price controls from an industry when the supply of an industry's commodity is equal to the demand. Such a declaration of policy was regarded as important.

Controllers Elect Six New Members from Oil Industry

Controllers Institute of America has elected six new members from the petroleum industry.

They are William E. Eberhart, Jr., vice president and treasurer of Climax Engineering Company, Clinton, Iowa; William S. Hendry, assistant treasurer and controller of Gilbert & Barker Manufacturing Company, West Springfield, Mass.; W. A. Tokola, treasurer of Capital Company, San Francisco; John H. Bossert, treasurer, of Maguire Industries, Inc., New York; J. W. Cason, controller of Interstate Oil Pipe Line Company, Tulsa; and Martin A. McNulty, controller of Standard Oil Company (Indiana), Chicago.

Deepest Oil Production Established By Louisiana Well at 13,778 Feet

A new record for deep oil production was established April 11 at Weeks Island, southeast of New Iberia, Louisiana, at Shell Oil Company's Smith-State Unit 1, well No. 2.

Perforated at 13,763-778 feet, the well flowed 530 barrels of 33-gravity oil from Miocene formation in 24 hours through an 11/64-inch choke with a tubing pressure of 1750 pounds. The gas-oil ratio was 1425 to 1.

The new record producer is located only 400 feet from the previous record-holder—Shell's Smith-State Unit 1 well No. 1—which was completed in April, 1945, from perforations at 13,505-520 as a gas-distillate producer.

The No. 2 was drilled with a marine drilling rig to a total depth of 14,301 feet and plugged back for completion. The drilling unit was the same used to drill the No. 1 well.

The 13,430-foot string of 7-inch casing was run and cemented in the record time of 11 hours and 45 minutes. Subsequently a 5-inch liner was set and cemented down to a depth of 14,083 feet.

The total time from start of drilling to completion was 284 days. Excluding 85 days of "trouble time" the actual drilling days were 191. Fifteen days were lost in moving back to recondition the No. 1 well, which was supplying the fuel, 43 days were lost in fishing oil-struck drill stem, and 23 days lost in sidetracking.

The Weeks Island well is not the deepest test for oil ever drilled. This record is held by Phillips Petroleum Company's Schoeps 3 in the Millican salt dome area, Brazos County, Texas, which was drilled to 16,655 feet.

The Weeks Island field holds three world's records: world's longest string of 7-inch casing set in April, 1945; world's deepest gas and distillate well and the world's deepest oil producer.

Turning the valve at the completion ceremonies were J. L. McHugh, Louisiana Conservation Commissioner, and John A. Smith, representing the Smith interest in the well. Shell officials attending the ceremony included A. J. Galloway, vice president; A. E. Jago, executive assistant to Galloway; W. A. Alexander, production manager and E. N. Van Duzee, manager of Shell's Lake Charles division office. Van Duzee said total cost of the well approximated $400,000.

OPA Price Removal Talk Is Shut Off At Meeting of Interstate Oil Compact

Prospective removal of price controls was the paramount subject of oil operators attending the Interstate Oil Compact Commission meeting in Tulsa last week. Despite the fact the Compact cannot consider price, this question was up frequently during the course of discussions.

At the open forum meeting nothing but OPA restrictions was discussed until Acting Chairman Ernest O. Thompson ruled that price was beyond the scope of the Compact. Thompson had to announce the ruling three times before they would subside.

The company men insisted that there is no longer need for OPA since there is available an adequate supply of oil. They were disturbed by a report from Washington that ceilings on gasoline and lube would be eliminated while restrictions on crude and other products would remain. Every man who expressed himself opposed this system and urged that all restrictions must be lifted at one time. Otherwise, they contended, the industry would be disrupted.

The recently expanded economics advisory committee made its first report, declaring the "oil industry is in a position to meet all demands now, if government controls do not operate to hamper adjustments."

The advisory committee is headed by Dr. Richard Gonzalez of Humble Oil & Refining Company.

The committee predicted that the remaining 1946 demand would range from 4.4 to 4.5 million barrels daily, as compared with 4.52 million barrels of crude for the first quarter of the year. Individual estimates by committee members indicate refinery crude runs to stills about equal to domestic crude production. The reports of this committee will serve as a direct check on estimates by the U. S. Bureau of Mines.

Compact plans contemplate the establishment of a statistical bureau to supplant work done by several associations. Apparently the larger activities of the Compact in influencing legislation in the field of conservation are to take a less important place.

Speaking privately on stocks, one economist estimated that gasoline stocks should remain at about 95 million barrels, with crude at 230 million. As a group the advisory committee predicted that "as the demand for distillate declines, now that winter is over, it will be possible for refiners to make more residual fuel if prices cover the added cost involved. The present relation of residual fuel oil supply and demand is serious because stocks are already so low, but sufficient flexibility exists in refinery operations to permit the industry to meet demands under proper circumstances.

An unusually large group of operators attended the meetings, and greater interest is resulting from the report of the economics committee. Governors of four states were in attendance, and 21 states had representatives at the meeting.

Research Project Report Scheduled for NGAA Meet

"Sampling of Two-Phase Gas Streams from Cycling Wells," by Dr. Donald L. Katz, University of Michigan, Ann Arbor, the first public report on nearly three years of full-scale field testing in a cooperative research project to determine methods for obtaining representative samples of condensate well gas streams, will be given at the Silver Anniversary convention of the Natural Gasoline Association of America, April 17-19 at the Baker Hotel, Dallas. A prepared discussion will be presented by T. W. McGuire, Cotton Valley Operators Committee, Cotton Valley, La.

Other papers include: "Corrosion in High Pressure Gas Wells," by T. S. Bacon, Lone Star Producing Company, Dallas; "Finding Corrosion in Cycling Wells by Injection of Chemical Inhibitors," by C. K. Eilerts, U. S. Bureau of Mines, Bartlesville, Okla.; "Chemicals from Lighter Hyddocarbons," by J. E. Bludworth, Celanese Corporation, Corpus Christi, Texas; "High Pressure Absorption," by Henry N. Wade, Stearns-Roger Manufacturing Company, Denver, Colo.; "The Behavior of Hydrocarbon Material in Condensate Reservoirs," by Dr. Frank H. Dotterweich, Texas College of Arts and Industries, Kingsville, and E. O. Bennett, engineering consultant, Houston; "Plans and Opportunities for the Natural Gasoline and Cycling Industries," by J. H. Dunn, Shamrock Oil & Gas Company, Amarillo, Texas, and NGAA president (prepared discussions by Ray E. Miller, Hanlon-Buchanan, Inc., Oklahoma City, Okla., and Elmer F. Schmidt, Lone Star Gas Company, Dallas); "The Refiner Looks at Natural Gasoline," by James W. Vaiden and F. E. Fisher, Skelly Oil Company, Tulsa; "The Antiknock Properties of Materials Resulting from Superfractionation of Natural Gasoline," by T. W. and H. R. Legatski, Phillips Petroleum Company, Bartlesville; and "Cycling Products as Motor Fuel," by Dr. G. G. Brown, University of Michigan, Ann Arbor.

Address by Fell

Harold B. Fell, Ardmore, Okla., will address the oil and gas division of the Oklahoma City Chamber of Commerce at its monthly luncheon-meeting on April 15 on "The Position of the Independent in the Oil Industry."

Committee Gives "Yes" and "No" Report About Co-Ops

The House Small Business Committee last week submitted a report on its investigation of the competitive relationships between cooperatives and other forms of business enterprise giving the former a clean bill of health.

The committee recommended, however, that the Internal Revenue regulations be amended to limit the capital additions of cooperatives by making mandatory the payment of all refunds due to patrons but retained as reserves by cooperatives at intervals of not longer than five years, and to "require that farm purchasing cooperatives limit their transactions to the handling of farm production supplies, and place upon the cooperatives the burden of establishing the fact that they meet this restriction."

The report held that tax-exempt farmer cooperatives "apparently" do have an advantage over competitive businesses operating in the same fields to the extent that their income for the payment of dividends on capital stock and accumulated in reserve escapes federal income taxation, but "it does not appear that the tax exemption available to exempt farmer cooperatives has any true bearing upon any competitive advantage which the cooperative might have in its normal operations."

"Agricultural cooperatives which are nonexempt from federal income tax and all consumer cooperatives apparently enjoy no privileges or advantages under the tax laws which are not available to all other types of competitive businesses operating in the same lines of endeavor," it declared. "Non-cooperative business agencies, if they are willing to render services at cost, would not be subject to any income tax."

The committee acknowledged there is "undoubtedly" some relaxation or nonobservance of the restrictions of the revenue laws in some cases, and suggested more strict supervision.

The committee found that there is substantial evidence to show that the cooperative movement operates as a very successful means of combating monopolistic concentrations and, as such, "is a very healthy addition" to the American economy.

Seeks Incentive Lease Figure

A flat 12½ percent royalty from production from all new discoveries under government leases, whether from new horizons in existing leases or from as yet unknown structures, was sought last week by Senator Joseph C. O'Mahoney of Wyoming and Senator Carl A. Hatch of New Mexico in an amendment proposed to pending legislation to reform the leasing laws.

Declaring that "there was never greater need than now for the development of new sources of petroleum in the United States," O'Mahoney explained that the amendment would perpetuate the idea of the legislation he sponsored in 1942, providing a flat 12½ percent royalty for ten years for the discovery of new deposits.

"The experience which the Department of the Interior has had under the Act of 1942 has been so satisfactory as to indicate that a continuation and extension of this incentive program will lead to the discovery of new oil resources," O'Mahoney said.

Ohio, Kentucky and Georgia Voice State's Rights Views Before FPC

The Federal Power Commission has completed its "field" hearings in its natural gas investigation. Interested parties now are turning their eyes toward the "big show" slated to begin in Washington June 17, when both the industry and the adversary interests, including coal and railroads, are expected to expend their mightiest efforts in round-up presentations.

The hearing concluded last week in Charleston, W. Va., turned up some unexpected testimony, because it was supposed that the heavy coal producing states, Pennsylvania, West Virginia, Kentucky and Ohio would not agree with the theories advocated by the natural gas industry.

On the contrary, however, these interests proved as great a champion of the cause of state's rights and free and open markets for natural gas as did the Southwestern producing states. The strong position taken in that regard on behalf of West Virginia and Pennsylvania was reported last week. But Ohio and Kentucky, aided emphatically by another coal producer, Georgia, since that time have given the FPC to understand that they are bitterly opposed to any action, which would permit the federal agency to invade the jurisdiction of the state concerning natural gas matters, and that they dislike any suggestion that "end use" should be controlled by the federal government.

Kentucky's Stand

The Governor of Kentucky, Simeon Willis, transmitted to the Charleston hearing one of the strongest statements yet made. He not only protested federal invasion in these fields, but asserted that the apprehension held by many, that enactment of the natural gas act may lead to nationalization of the industry, appears to have been well founded. Furthermore, he said, Kentucky desires that this trend be reversed, and that the FPC recommend, as result of the investigation, that the states be assured their proper jurisdiction over the industry.

Other Kentucky witnesses, including members of the State's Public Service Commission, backed up the Governor's position and contended that worrying now about the possibility of exhausting the reserves of gas is so much foolishness. Other forms of energy, or other methods of replacing gas energy, will undoubtedly come along before the present reserves of gas play out, they maintained.

N. Knowles Davis, chief engineer of the Georgia Public Service Commission, who said he spoke for his commission, was severely critical of those who are advocating added federal control over natural gas matters.

He contended that there was no justifiable reason for instigating the investigation in the first place, and that "after following its progress to date, we are now convinced that the apparent purpose is unsound and that the entire investigation should be abandoned. Legislation in line with the apparent purpose of this investigation," he continued, "could have but two results: (1) invasion of the sphere of state authority and interference with local self government, and (2) a further shift in the already dangerous trend toward controlled economy ultimately resulting in regimentation."

The State of Virginia likewise protested against any federal restrictions, which would prevent the people of that state from obtaining adequate and continuing supplies of natural gas. Even Chairman Flanagan of the District of Columbia, where mixed gas is serviced, took a similar position.

Gas "Czar" Idea

It became evident during the hearings that Tom McGrath, counsel for the coal interests, is aiming at the idea of trying to prove that because nearly everybody wants natural gas, there must be some czar to make the distribution to determine who gets how much.

He quizzed almost every witness as to how much gas is now being served his (the witness') area, and how much more probably will be requested.

He seemed anxious to have the witness develop the thought that everybody, both domestic and industrial users, in his area wants to begin or continue to use natural gas.

Undoubtedly his purpose is to attempt to prove, during the Washington hearings, that virtually every domestic and industrial consumer in the areas to which pipelines run, or are contemplated, wants natural gas. That being the case, somebody must do without, because, he will contend there is not sufficient gas reserves to supply all present and potential customers; therefore, some federal agency must be given the authority to dole it out to whoever that agency thinks should have it.

Naturally, he hopes that the "czar" will agree with him that there are "superior" and "inferior" uses for his "superior" fuel and therefore, coal should be left free to take over the "inferior" market.

He has not yet, however, revealed how he can show that a pipeline can be successfully operated by serving only domestic, and the few other classes of customers he might agree were "superior" users, because there will be no one to take the off-peak loads during the summer months.

Asks Mississippi Line

United Gas Pipe Line Company has applied to FPC for authority to build approximately 86 miles of 6-inch pipe line between Jackson and Philadelphia, Miss., at a cost of $720,000.

Research Legislation Seems Unlikely of 1946 Passage

Although the Senate Military Affairs Committee last week reported the administration-sponsored science legislation, political and other controversies which have been injected into the subject are seen as making impossible final enactment of the measure this year.

At least a half-dozen bills have been introduced, each providing for a different form of administration, ranging from a branch in the Department of Commerce to an independent agency, and running in scope from a government-science partnership in which the developments of industry would be protected to full government domination and dictation of research programs, the result of which would inure to the public benefit.

None of the several versions of the legislation discussed in hearings of either the Military Affairs subcommittee or the Commerce Committee, which also is interested, has received the full support of industry. Most of them have been vigorously condemned.

Other factors in the situation are the difference in approach between the two committees. The Military Affairs subcommittee is lined up with the War Department, which would like to see government control of research, while the Commerce Committee, with its industrial background, looks at the proposition from the standpoint of civilian business. Also, the effort of Secretary of Commerce Henry A. Wallace to snag the job of administering the legislation for his department, as opposed to other plans to set up an agency under the President; and there are further differences as to the composition of such an agency and whether it shall be dominated by government officials or by independent scientists.

Favored by Sub-committee

The bill sent to the Senate floor last week is that recommended by a subcommittee last February (THE OIL WEEKLY, March 4), providing for establishment of a National Science Foundation and calling for an appropriation of $33 million to get the program under way and increasing appropriations thereafter reaching $122 million in the fifth year of operation.

In its final report the committee emphasized that the bill reconciles "in the most constructive manner" the alternative proposals which have been put forth on the subject of federal support for science.

The proposed foundation would be headed by an administrator, selected by the President from a list of names to be submitted by a nine-man national science board which will act in an advisory capacity.

The bill provides that the results of federally financed research shall be made freely available to the public but provides protection for the commercial rights of private organizations or individuals who have contributed substantially to a particular development partially financed by federal funds. No changes whatever are made in existing patent laws.

Texas Allowable Increased By Adding Three More Days

The Texas Railroad Commission last week granted the Navy request for additional production of 200,000 barrels per day. The action was taken unanimously, however, only after Commissioners Olin Culberson and Beauford Jester had sought strenuously to have the supply of Navy fuel produced from crude already in storage.

For several weeks, Commissioner E. O. Thompson has urged that the Commission must grant the oil because it could be produced without waste and the demand existed. Jester had told the Navy flatly that the raise would be granted when OPA price restrictions were off and crude prices raised 58 cents per barrel.

The order last week added three producing days for April, making a total of 24. This will mean an increase in the daily average allowable of 200,000 barrels per day.

Through the entire argument independent producers urged that no allowable increases be ordered until the price is raised materially, whereas independent refiners advised they would have to shut down shortly unless additional crude was made available.

Before the new order was issued, Commissioners Jester and Culberson advised the Navy that they would approve the increase, providing the Navy got the oil. The commissioners proposed to require that the Navy show who would get the oil, where it had come from and that these people would deliver it to the Navy. Before an answer was received, the new order was issued without strings attached.

Meanwhile, the commission invited both the Navy and OPA to send representatives to the statewide proration hearing in Austin, April 19.

It was revealed in Washington last week that PAW, commencing as early as March 25, had made an unsuccessful effort to induce the Texas Commission to increase the production allowable.

Two More Oil and Gas Maps Readied by Survey

Two additional preliminary maps of the Oil and Gas Investigations series have been announced by the U. S. Geological Survey.

In Preliminary May 53 (50 cents per copy at the Washington, Casper, Wyo., Denver and Tulsa offices) the survey shows the Sage Creek dome in western Wyoming, where, it was said, two hitherto unproductive areas may be found to contain commercial accumulations of oil and deep strata also offer good possibilities for oil.

In Preliminary Chart 21 (Washington office, 40 cents per copy) is a guide to oil and gas geologists for mapping surface structures in northeastern Ohio and northwestern Pennsylvania. Data obtained from studies of the rocks at the surface and from the examination of samples of well cuttings are shown on the chart.

Bureau of Mines Figures Disclose Production Drop During Past Year

Domestic crude production in January averaged 4,625,000 barrels daily, an increase of 157,000 barrels over December but a decrease of 123,000 barrels from January, 1945, the Bureau of Mines reported last week.

Increase over December was due largely to gains of 105,000 barrels daily in Texas, 16,000 in Kansas, 10,000 in Wyoming and 9000 in Louisiana.

Demand for domestic crude declined 17,000 barrels below the December level to 4,475,000 barrels daily, resulting in an increase in stocks at the rate of about 150,000 barrels daily, to 224,957,000 barrels at the close of the month. Total crude stocks, domestic and foreign, were 227,996,000 barrels on January 31, against 223,259,000 barrels at the close of 1945.

The bureau reported crude runs to stills of 4,520,000 barrels daily, a drop of 54,000 barrels from December, but while stocks of gasoline increased 4,800,000 barrels during the month, inventories of distillate fuel oil declined 6,800,000 barrels, residual fuel oil 2,600,000 barrels and kerosine 2,100,000 barrels—a net decline of 7,800,000 barrels which brought total stocks of refined products down to 228,213,000 barrels January 31. Total demand for motor fuel was 56,700,000 barrels against 54,800,000 barrels in December. The yield of gasoline declined from 41.2 to 38.8 percent.

Total demand for all oils averaged 5,395,000 barrels daily, including exports of 406,000 barrels; imports of all oils averaged 369,000 barrels daily.

Total domestic crude production for the month as 143,368,000 barrels against 138,495,000 barrels in December; natural gasoline, 9,882,000 barrels against 9,631,000 barrels, and benzol, 240,000 barrels, unchanged, a total of 153,490,000 barrels against 148,366,000 barrels. Imports included 6,917,000 barrels of crude against 7,508,000 barrels, and 4,510,000 barrels of refined products against 3,129,000 barrels, giving a total new supply, all oils, of 164,917,000 barrels against 159,003,000 barrels.

Total demand was 167,253,000 barrels against 162,552,000 barrels in December, including exports of 1,932,000 barrels of crude against 2,329,000 barrels, and 10,671,000 barrels of refined products against 8,971,000 barrels, with domestic demand as follows (in barrels):

Motor fuel, 51,186,000 against 50,129,000; kerosine, 11,176,000 against 9,830,000; distillate fuel oil, 29,473,000 against 28,626,000; residual fuel oil, 44,966,000 against 45,726,000; lubricating oil, 2,689,000 against 2,606,000; wax, 166,000 against 163,000; coke (equivalent) 766,000 against 721,000; asphalt, 1,858,000 against 1,838,000; road oil, 104,000 against 70,000; still gas, 6,864,000 against 7,528,000; miscellaneous, 3,542,000 against 3,427,000; losses, 1,860,000 against 588,000.

Stocks at the end of the month included 223,442,000 barrels gasoline-bearing crude against 218,763,000 December 31; 4,554,000 barrels heavy crude in California against 4,496,000; 5,034,000 barrels natural gasoline against 4,322,000, and 228,213,000 barrels refined products against 235,998,000, a total, all oils, of 461,243,000 barrels against 463,579,000 of 85 days' supply against 88 days.

The Bureau of Labor Statistics price index for crude and products for January was 61.5 compared with 61.6 in December and 64.3 in January, 1945. The crude capacity represented in the report was 4,947,000 barrels, indicating an operating ratio of 91 percent, against 92 percent in December and 93 percent in January, 1945.

Crude Oil Production in the United States

(Estimates compiled by the OIL WEEKLY. All figures indicate daily averages in barrels.)

State or District	PRODUCTION IN WEEK ENDED April 13	April 6
Alabama	1,050	1,000
Arkansas	77,350	77,100
California	854,800	853,400
Colorado	23,750	24,500
Florida	100	100
Illinois	210,450	209,500
Indiana	18,500	18,150
Kansas	259,150	236,000
Kentucky	32,500	32,000
Louisiana	370,800	370,300
North Louisiana	84,000	83,500
South Louisiana	286,800	286,800
Michigan	45,950	45,750
Mississippi	55,050	55,850
Missouri	100	100
Montana	20,150	20,050
Nebraska	750	750
New Mexico	96,550	96,550
New York	13,250	14,150
Ohio	6,650	6,750
Oklahoma	379,400	368,500
Pennsylvania	37,000	36,850
Tennessee	35	35
Texas	2,054,600	1,864,400
Upper Gulf Coast	480,700	430,000
East Texas Field	372,000	327,200
Rest of Eastern Texas	139,700	133,500
Southwest Texas	326,500	295,650
West Texas	495,000	453,050
North Texas	158,700	149,000
Panhandle	82,000	82,000
West Virginia	7,850	8,100
Wyoming	105,500	108,500
Total United States	4,671,285	4,448,385

Total stocks, foreign and domestic, April 6, as reported by the Bureau of Mines were 221,214,000 barrels with a daily average production of 4,446,000 and runs to stills 4,533,000

New Petroleum Section

Establishment of a petroleum section in the commodities branch of the Commerce Department office of world trade promotion was announced April 1 by George L. Bell, director of the office.

The section will be under the administration of James H. Mayes, formerly associated with the export control activities of the Board of Economic Warfare and FEA.

Better Relations With Argentina Urged So As to Improve Oil Trade

Return of Argentina to good standing among the American republics, the way for which was paved by Secretary of State Byrnes with his recently suggestion that the Peron government purge the country of all Axis influences as a condition to membership in the Western Hemisphere defense bloc, is of considerable importance to the oil industry and particularly to manufacturers of oilfield equipment doing business in Latin America.

As a result of our refusal to restore normal relations with Argentina, American manufacturers are losing important business to England, where the Argentine government is able to buy without difficulty.

The situation was brought out in a letter from J. H. Eustice, president of W. C. Norris, Manufacturer, Inc., of Tulsa, to Representative George B. Schwabe of Oklahoma.

Eustice reported that large orders from Argentina had to be canceled because export licenses could not be obtained. He enclosed a copy of a letter from Armco Argentina, S. A., Buenos Aires distributor, reporting that YPF recently sent a purchasing delegation to this country, could not arrange for material, including large quantities of sucker rods and casing, so placed the order for rods in England.

Placed in England

Orders already have been given England and Europe to the value of $1,200,000, "and this is only the beginning," Armco added. Orders already placed call for 1000 tons of casing and 450 tons of sucker rods from England, and 3000 tons of casing and 500 tons of tubing from Belgium.

"We, as well as other United States heavily taxed industries, are now being severely penalized by the fact that our United States steel mills are being required to ship and perhaps eventually give to England large tonnages of steel products which in many instances is putting a hardship on us because there is not enough production in the steel industry at the present time, and from what we understand will not be for perhaps another year to 18 months, to satisfy the tonnage demands of our own industries," Eustice wrote.

Commenting on the situation, Schwabe asserted "apparently the national administration is thinking more of the welfare of England and its commercial rehabilitation than it is of the rehabilitation of our own industries and the successful conduct and prosperity of American concerns and American citizens."

Evidence of the government's good faith in inviting Argentina to become a member in good standing of the hemisphere group was given in an action of the Office of International Trade April 11, when that country was taken off the list of nations to which special restrictive export regulations apply.

As a result, general license privileges which enable exporters to ship freely domestic commodities that are not in short supply are now extended to include Argentina.

Heretofore, Argentina has been classed with Spain, Austria, Bulgaria, Hungary and Roumania, on the so-called restricted list. Individual licenses were required for exports to those countries, and only a minimum amount of goods most necessary to them was permitted to move.

House Committee Slashes Fund for Antitrust Work

A House Appropriations Committee warning to the antitrust division of the Department of Justice to quit harassing business was buttressed last week by a cut of $200,000 in the fund asked by the division for operation during the fiscal year beginning July 1, next.

The division asked $1,900,000 for the coming year and was given $1,700,000, or $175,000 less than for the current year.

Commenting on the testimony given by division officials regarding antitrust enforcement, the committee agreed that our free enterprise system must be kept free of the restrictions inherent in price fixing and other monopolistic practices, but commented "it is the sense of the commission that the division is gradually losing its perspective in this field by devoting too much personnel and effort to minutiae to the harassment of business generally."

Rather than "misguided investigations and prosecutions of the little business man, the division should direct its efforts to the real monopolistic dangers in this Nation," the House was told.

The report held that the present penalties for antitrust violations are too small to be a real deterrent and called upon the department for recommendations for increases which would make monopolistic activities unprofitable. Deparentment recommendations along that line before the war, however, never received any support in Congress.

Gas Well to Be Drilled for City of Guymon, Okla.

Guymon, Okla., in the Guymon-Hugoton gas field of Kansas, Oklahoma and Texas, is to get its own gas well. The City of Guymon 1, on Lots 19 and 20, Block 13 of the original Guymon townsite in Texas County, has been staked by J. M. Kessler, independent operator of Oklahoma City.

Kessler took original leases from the city and property owners on most of land in the section, then secured a pooling order from the state corporation commission last October.

Price and Supply Enter Texas-Coast Gas Hearing

Completion of the projected pipe line to bring natural gas from West Texas to Southern California would not tend to decrease purchases of gas from California oil companies. This assertion was made by William Moeller, Jr., vice president of Southern California Gas Company, before the FPC hearings on the pipe line during cross examination by FPC attorneys.

He declared that both Southern California Gas and Southern Counties Gas, the two purchasing companies of the proposed imported fuel through the 2000-mile pipe line, plan to continue buying from West Coast producers. He inferred that increased fuel demand in the growing Southern California industrial and residential areas will insure a market not only for the California gas, but for the Texas gas as well.

Regarding the question of price paid by the utility companies to California gas producers, Moeller did not promise a price equal to the 13½ cents the imported gas is expected to cost at Blythe, plus additional piping costs across the 214 miles of pipe line to be built by the two purchasers. Determination of how much is paid for California gas, he indicated, will be determined by regular negotiation.

While independent oil producers of California have refrained from openly opposing the pipe line to Texas, they have voiced opposition to the "low prices" they get for natural gas.

Later sessions were occupied by detailed questioning of witnesses to bring out further information regarding Texas gas reserves and the potential threat of a future shortage. No apparent points of opposition were raised by FPC in the cross examining.

Hearings will continue into next week.

(Further details on this hearing, page 72.)

Kansas-Nebraska Is Granted Permit for Line Expansion

Authority has been granted by the FPC for the construction of a $1,575,000 expansion program by Kansas-Nebraska Natural Gas Company, involving the laying of approximately 56 miles of 16-inch and 21 miles of 12¾-inch pipe line from Phillipsburg, Kan., to Hastings, Neb.; replacement of approximately 56 miles of 16-inch line with pipe of smaller diameters, and construction of approximately 100 miles of lateral pipe lines to serve Nebraska communities. The company also is authorized to acquire 34 miles of lateral pipe line from Central Electric & Gas Company and to construct a new compressor station near Palco, Kan.

Final Gas Area Hearing

The Texas Railroad Commission has scheduled its final area hearing on waste of flare gas in Texas. The meeting is set for April 25, at Fort Worth. The fields in Districts 5 and 6, East Central Texas, and District 9, North Texas, will be up for consideration. The operators from each field have been asked to supply data.

Pacific Coast API

Petroleum Outlook Outlined, Moore Scores Federal Acts

By GILBERT M. WILSON, Staff Writer

United States Senator E. H. Moore, former oil man of Oklahoma, in the feature address last week before the Pacific Coast API Division of Production spring meeting answered a hundred or more times the question suggested by his title, "Would the Public Interest Be Served by Nationalization of the Oil Industry?", and each of his answers was "no." Senator Moore described "the creeping paralysis of federal control" and called for election to public office "men who believe in Americanism, the constitution and free enterprise."

Senator Moore's address, given at the banquet in Los Angeles, held in the interest of several hundred oil men who also listened during the two days to talks of timely importance to both the nation's as well as California's oil industry. E. H. Minckler, vice president of General Petroleum Corporation, Los Angeles, speaking on "Outlook for California Oil," gave numerous forecasts and an over-all picture of indicated production and marketing trends as they will affect California in the next five years.

A number of technical papers were presented dealing with secondary recovery, gas injection, waste water injection, natural gas storage, drilling costs, oil muds, etc.

M. W. Morris, Standard of California, was elected chairman of the Pacific Coast district, succeeding Basil Kantzer, Union Oil Company.

Senator Moore said "there never has been a more spurious or illegal attack upon the right and authority of the sovereign states by any federal agency than that of the Interior Department by prosecuting the tidelands suit," declaring "no principle of accepted constitutional law is safe from the attack of those who would destroy our system of government upon which the private enterprise and industrial greatness of this country is built."

He took several whacks at former Secretary Harold Ickes and his effort to get control in one fashion or another of the oil industry, pointing out that the Petroleum Reserves Corporation still exists under the name of "War Assets Corporation" which retains "all of its original corporate powers to engage in the oil business."

"The oil industry or any other private industry cannot compete wtih government corporations," he declared, as he cited the unsatisfactory experiences of Russia, Mexico and Bolivia where oil is a government monopoly.

The speaker thought the Special Senate Committee to Investigate Petroleum Resources hearings had been effective in demonstrating "there is no room in our private enterprise system for government ownership or control of our petroleum reserves." He hoped this committee will recommend adopted by Congress of "a national and international petroleum policy that will once and for all lay down the inflexible limits to which various government agencies may go" in dealing with the oil industry.

Arguing that "a free economy cannot exist without free prices," the senator declared for stimulation of production rather than continuance of OPA, citing that "the seed of inflation is curtailment of production." He said there was no rhyme or reason why the oil industry is still subjected to rigid price controls; that the only explanation is that "in free America we have actually fallen victim to a philosophy of planned economy."

He concluded by pointing to the responsibility of every citizen to dedicate himself to the task of electing to office "without the slightest regard to party affiliation" men who believe in Americanism, the constitution, and free enterprise."

Outlook for California Oil

By R. L. Minckler, Vice-President, General Petrofeum Corporation, Los Angeles.

Prewar markets in China, Japan and the Philippines were an important factor in California's oil economy, but they will be poor customers in the period until 1950. Australia and New Zealand, falling under the sterling bloc, probably will not be an active market. Trans-Pacific shipments likely will be limited to relief levels and Intercoastal and Atlantic foreign shipments will not be large due to availability of Caribbean and Gulf Coast oil. California will continue ot supply the demands of Western Canada, Alaska and Hawaii together with the West Coast of Mexico and Central America, with total off-shore movements of 80,000 to 85,000 barrels per day compared with prewar levels of more than twice that amount.

It is expected that domestic demand in the Pacific Coast area will greatly exceed all peacetime levels. Population has increased and nearly 14 million people in the five states is predicted by 1950. Many leading United States firms with plants elsewhere, are decentralizing their operations to new plants and markets in the Western States. Since much postwar military activity will be in Pacific areas, California will be the natural source of oil supply for it and such requirements should be two to three times that of prewar years.

California enters this period of high demand with very low inventories—70 million barrels, a supply of 100 million barrels being a more comfortable working level. To meet current demands for crude oil and to build up stocks to the desired level will require crude oil production during 1946 of about 818,000 barrels daily and in 1947 through 1950, 725,000 to 744,000 barrels daily. Prewar highway use has accounted for about 90 percent of the total domestic demand for gasoline, and demand will continue high. Diesel fuel consumption will rise, marine diesel bunker fuel is not expected to reach its prewar volume, but mines and manufacturing industries will increase activities. Demand for distillate fuel should remain close to war-time levels.

California's ability to meet the high postwar demands will be sufficient but margin of surplus will have shrunk sharply by 1950. Major discoveries have fallen off seriously, and following development of proven locations by the end of 1946, new development will be cut down considerably. MER of known fields will decline from 825,000 to a little more than 600,000 barrels per day at the end of 1950. The decline will accelerate if operators persist in presently exceeding their MER's. For the next two or three years producers will be faced with the alernative of producing somewhat in excess of demand and force their products into uneconomic markets or they can produce only to meet economic demand and defer the time of shortage. The state should produce only to meet demand. For more than 20 years, the California crude oil producer has been in a buyer's market. In the almost immediate future, he will be in a seller's market. That will be good, not only for the producer, but for the community and the nation.

Experience With Electric Eddy Current Rotary Brake

By A. E. Woollen, Standard Oil Company of California, Taft.

The electric dynamic brake used on a rotary drawworks does not employ new electrical apparatus or principles. It is the adapting of an electrical principle and machine already in use to a new application. Briefly, the electric eddy current dynamometer has been applied as a braking power on a drawworks. Redesigning is necessary to meet the new conditions of service, in adapting the existing equipment to a new use. Two models have been built by Standard Oil Company of California —the first in 1939 and the recond, and improved model in 1942, the latter being successfully used on three 11,000-foot wells in the Greeley area of California. It has a maximum torque of approximately 64,000 foot pounds.

The brake is mounted in the conventional place on the drawworks base and the brake shaft is coupled directly to the drum shaft on the drawworks. It is 32 inches wide, five feet in diameter and weighs approximately 12,000 pounds. Coils mounted in the stationary part, the latter mounted on the frame of the drawworks, are impressed with direct current which sets up a strong magnetic field. The rotating members consist of the shaft, spider and drum, and when the drum is rotated, cutting the lines of magnetic force, eddy currents are induced within it. The electrical resistance of the drum is low, so at relatively low rotational speeds, high eddy currents are induced. At low rotating speeds a high braking effort is obtained and control is effected by increasing or decreasing the voltage impressed on the field coils. Heat developed by the brake is absorbed by circulated water which is cooled in an outside cooling tank or radiator. A pilot control for the field is mounted near the driller and may be connected to the hand brake lever so the first motion of the brake lever energizes the electric brake and further motion of the lever applies the hand brake.

It is felt that the electric brake fur-

nishes ample braking effort for our present loads of drill pipe and casing. Its characteristic of furnishing high torque at low rotating speeds is very desirable. It will furnish all of the braking effort required at high drum speeds leaving only the braking at very low speeds to be done by the friction brake. It is believed that no major problems exist in adapting this equipment to field use and that future development will be minor refinements of control and design.

Trends of Drilling Costs in California

By Ralph W. Marshall, Drilling and Exploration Company, Los Angeles.

There are two general factors, exclusive of costs of site preparation, casing and production equipment, which go to make up the cost of drilling an oil well. These are (1) the number of operating days, and (2) the operating cost per day. It was shown by graphs that the overall daily operating cost of running a drilling rig has, regardless of depth, doubled since 1936 and the number of drilling days, exclusive of days spent in completion work, has decreased about 50 percent. With these changes the average actual cost of making hole was about the same in 1945 as it was in 1936.

During this same period, the number of operating days, including completion, have decreased only approximately 35 percent. This reduction in total days has not been sufficient to offset the increased operating cost and, as a result, the total over-all operating cost has increased some 25 percent. Majority of the factors contributing to these increased operating costs are largely beyond the control of the operator. It is obvious that the problem is one of further reduction in the time spent in the various drilling operations from rigging up through the final completion. A further study should be made along the following lines and it is recommended that (1) a wider interchange of information be made regarding improved drilling practices, (2) further cooperation exist between manufacturers and operators in the development and application of more efficient drilling equipment, (3) a study be made of improved means of maintenance of drilling tools and equipment, and (4) the results of these studies be made more widely available to the industry.

Canal Field Gas Injection Project

By R. P. Mangold, Shell Oil Company, Incorporated, Bakersfield.

The Canal field, Kern County, discovered in 1937, has been developed generally on 20-acre locations. The field consists of 39 wells located on an elongated, dome-shaped structure. Originally no gas cap existed and the oil was under-saturated. The field had an original reservoir pressure of 3550 psi. Gas injection through three wells located along the general crest of the elongated structure was considered and agreed upon by the three major operators in the field, and operations were started in April, 1941. It was hoped that gas injection would result in (1) greater ultimate recovery by maintaining pressures or at least retard the rate of decline, and (2) substantial savings in operating expenditures both from the standpoint of eliminating need for pumping equipment at about half the wells, and prolonging the flowing life of others.

Following operation of a pilot plant, which yielded satisfactory results, a large scale injection plant was put into operation on August 1, 1942. Average reservoir pressure has been maintained at practically a constant level of 2250 psi and up until January, 1945, a total of 13,962,000 MCF of gas had been injected. Evidence of some channeling or blow-through of the gas to neighboring wells was found by use of an ethyl mercaptan tracer. Several factors, one being the relatively low productviity indices down-structure, as compared with higher values up-structure, have suggested that relatively little if any material down-structure movement of oil has occurred since start of gas injection activities. Until recently reservoir pressures have been maintained practically constant. About three-fourths of the producing wells are now subject in varying degrees to the blow-through of injected gas, although it still is too early to determine the effect of gas injection on ultimate recovery. There is some indication of a better sustenance of production from up-structure wells than might otherwise have been expected, but on the other hand, there appears to be little, if any, movement of oil to down-structure wells, practically all of which are pumping and have relatively low productivity indices.

Review of Special Water Base Mud Developments

By Ward R. Kelley, General Petroleum Corporation, Bakersfield; T. F. Ham, Superior Oil Company, Bakersfield, and A. B. Dooley, Belridge Oil Company.

Comparative results obtained in wells completed with various types muds are shown and three types of mud discussed: (a) clay fresh water-base muds, (b) organic colloids—both fresh and salt water-base, and (c) water-base and oil-base blends—emulsions. The more important factors involved in the choice of a proper mud are effects: (a) of mud cakes on the hole (b) of mud filtrates on sand permeability, (c) of mud particles on permeability, (d) on electrical logging, (e) on cementing, and (f) costs. Laboratory data and scattered evidence indicate that mud filtrates, mud cakes, and mud particles decrease optimum well productivity in varying degrees. By prudent application of the knowledge gained by accumulated data, operators are trying to reduce the detrimental effects of mud on the oil zones. Where high formation pressures, high permeabilities and low fluid viscosities are anticipated, efforts to achieve optimum productivity indices become important. The various muds have important applications in the mechanics of drilling, casing, and completing wells. Long intervals of open hole, troublesome formations, low clearance for tools or casing, and long periods of suspended circulation require expert mud supervision. Further laboratory and field experiments are justified.

Good qualitative and quantitative completion comparisons are difficult because of varying individual well conditions, including sand permeability data, formation pressures, gas-oil ratios, completion data, etc. Incomplete data on any of these or other important factors may prove misleading. By drilling a carefully selected well with the best drilling fluid available and then killing the well with less desirable fluids, results should be obtained which would add materially to our kwowledge of the reactions of productive sand to the various types of muds and treatment. Pertinent data such as productivity indices could then be obtained at specific times after different fluids are employed in the well, leading to more quantitative conclusions on mud behavior in well completions.

Results of the Use of Oil Base Fluid in Drilling and Completing Wells

By GLEN V. KERSTEN, Western Gulf Oil Company, Bakersfield, Calif.

In substantiation of earlier investigations that show there is an initial indicated improvement in well completion resulting from the use of oil or oil-base fluids, figures were obtained from five different California oil fields, four from the southern portion of the San Joaquin

■ CONTINUED ON PAGE 56

1946 Officers, New York Nomads

Officers for the year 1946 of the New York Chapter, Nomads, recently installed are shown above, left to right, as follows:

Seated: Val R. Wittich, regent; John H. Baird, president; David J. Muldoon, treasurer; William J. Campbell, regent. Standing: James W. Reed, secretary; George W. Knight, assistant sergeant at arms; Ben A. Hilliard, sergeant-at-arms; Edmund F. Gahan, assistant treasurer; and Kenneth J. Langley, assistant secretary. Ralston M. Dinges, vice president is not shown.

Efficient and orderly development promises to drain the reservoir to its maximum limits

Mattoon

By H. B. KNISELEY, The Carter Oil Company

ONE of the most important oil plays in the Mid-Continent area is under way at Mattoon in East Central Illinois. It is marked by efficient and orderly development which promises to drain the pool reservoir to its maximum and to contribute to the growth and prosperity of the region. The history of the Mattoon pool is singularly analogous to that of the Rangely pool, Colorado. Like Rangely, the Mattoon pool remained more or less dormant for more than five years or until a good well near the crest of the Mattoon structure started a boom which is still in progress.

The Mattoon pool is in Coles County. Slicing through the west edge of the City of Mattoon, the productive area extends about eight miles almost due north and south and at its widest point is 1¾ miles east and west.

Reserves of the pool are estimated roughly between 20 million and 30 million barrels and the ultimate producing acreage is calculated somewhere between 5500 and 6000 acres, of which about half has been developed.

Numerous wells have been completed for 400 barrels a day or better and a few have flowed at a much higher rate for a few days prior to completion. The Craig 1, in 26-12n-7e, flowed wide open for several days at a rate of 1000 to 1200 barrels, but settled down to 428 barrels on flow and pump on completion test.

North Extension Possible

While the outer limits of the pool have been rather well defined by dry holes, outpost drilling to the north may possibly result in an extension to the pool or the development of additional small structures.

A folded anticline similar to the Loudon and Salem pools farther south in the greater Illinois Basin, the Mattoon pool has five producing horizons, although only two have been proved for widespread production.

To March 15, a total of 173 oil wells had been completed in the field, including 27 in the Cypress sand, 107 in the Rosiclare sand, and 39 multiple completions in the Cypress and Rosiclare. At that time there were about 63 drilling operations, 50 of which were in various stages of completion.

Folding of the Mattoon structure occurred in the late Mississippian and early Pennsylvanian ages, with minor subsequent recurrent movements. Structural markers are the LaSalle limestone of the Pennsylvanian, the tops of the Cypress, Rosiclare, Mississippi lime and Devonian lime.

The Cypress is encountered at about 1775 feet, the Rosiclare at about 1925 and the Devonian at 3100.

The Mattoon pool has a rather unusual history in that it was first discovered in June, 1940, but did not get a substantial producer until 5½ years later. Early tests resulted in numerous dry holes and other unfavorable indications which slackened drilling activity and discouraged many operators who had shown an interest in the early play.

General structure of the pool was located by The Carter Oil Company, following extensive seismograph operations in 1936 and 1937. Carter confirmed seismograph information by core drilling, then leased a block of about 21,800 acres. Other major companies and several independent operators acquired leases in the area.

First Test

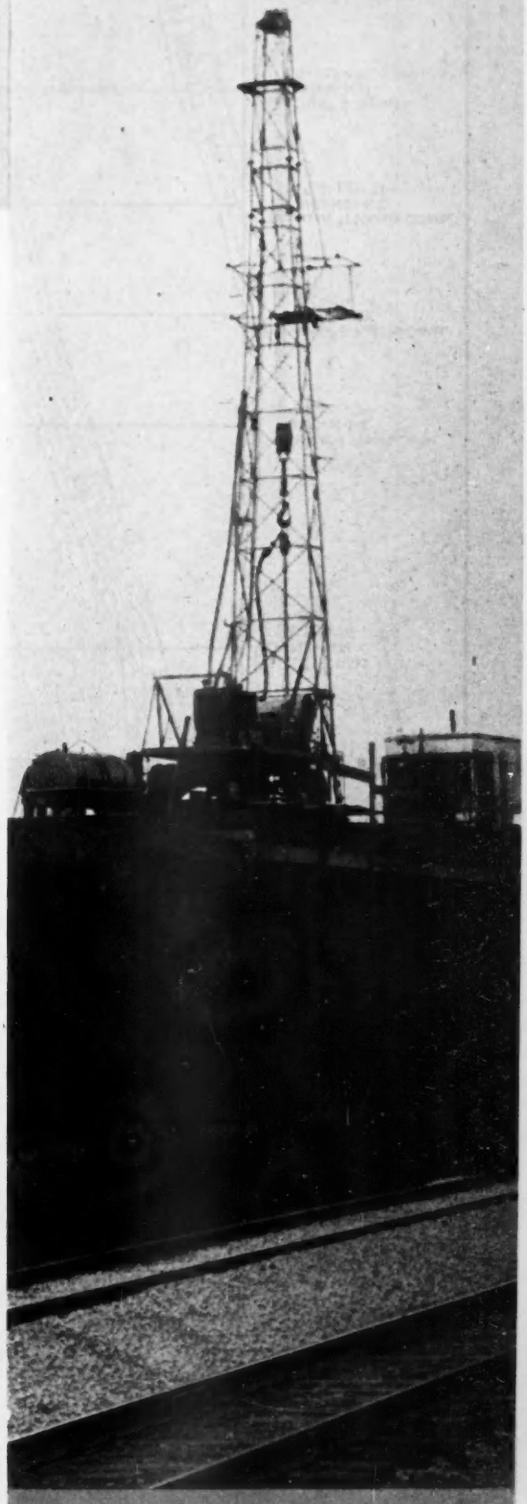
First test was drilled on the east flank of the Mattoon structure in February, 1939, by R. F. Wheless, in 1-11n-7e. It had shows of oil in the Cypress, but was unproductive because of the small amount of oil, considerable water and tight sand. Wheless drilled a second test ¼ mile east in Sect. 2, but failed to encounter favorable conditions in the Chester sand and after drilling to the Devonian lime, where no porosity was found, abandoned the well.

This test was followed by a Carter operation ¼ mile south of the first Wheless test, but the Cypress was found to be tight and water-bearing.

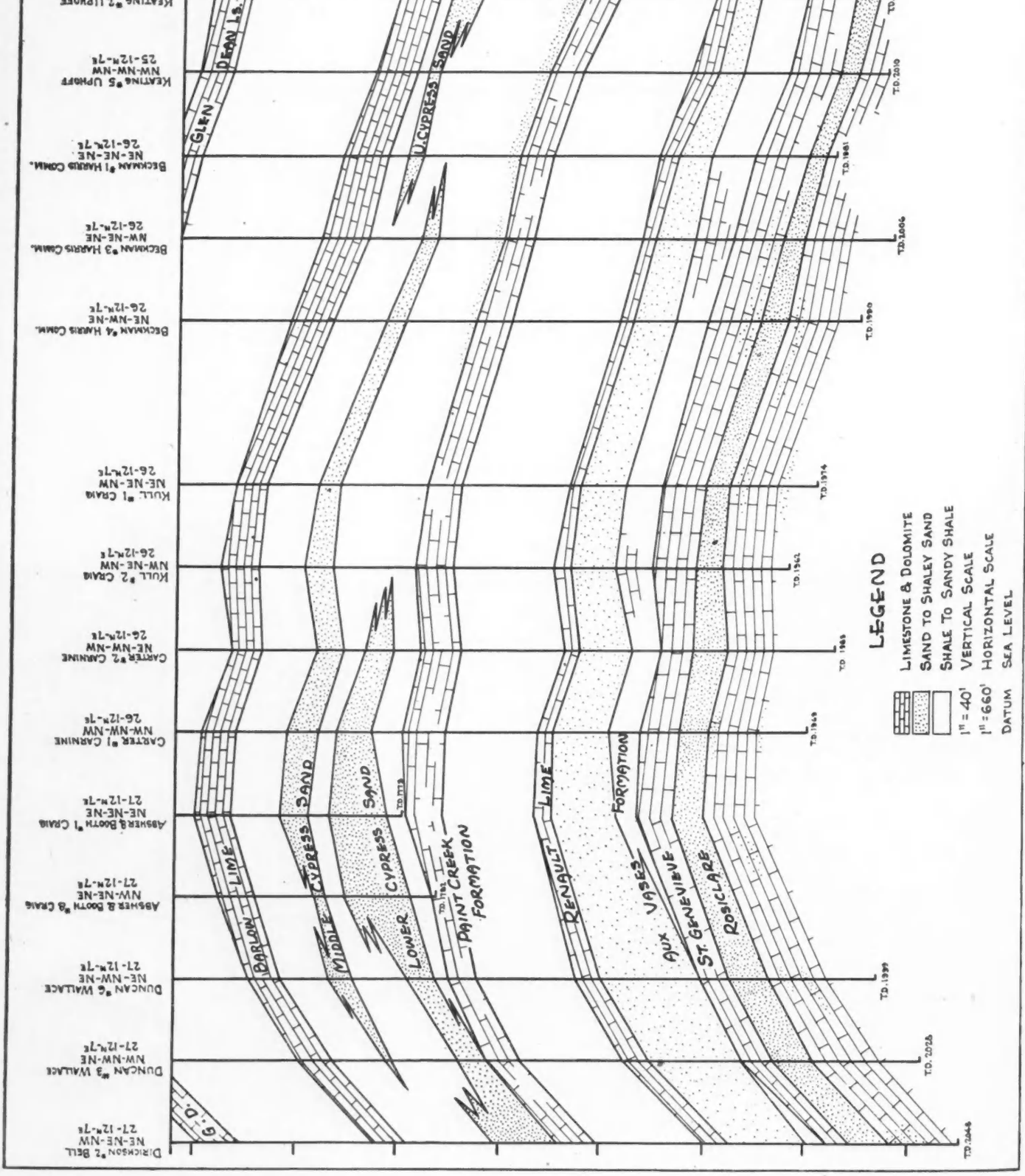
Then Carter drilled Seaman 1 to 4900 feet in 35-12n-7e, on the crest of the seismograph structure. Shows of oil were recorded in the Cypress, Rosiclare, McClosky, and Devonian, but several plugback operations made it less expensive to drill another well, the Seaman 1-A, which was completed in June, 1940, as the pool's discovery well in the McClosky limestone.

Although the discovery well had an initial of 121 barrels a day, the history of the McClosky farther south in the basin indicated the well would probably be non-commercial or only a marginal producer. However, this well over a period of 5¼ years has produced more than 37,000 barrels, but is currently pumping only about 12 barrels a day.

The Seaman bolstered lagging interest but tests to the immediate northeast, southwest, and south of the discovery were dry. On the southeast were the two Wheless tests, also dry; so enthusiasm dropped again. But with the drilling of all these wells, geological data obtained made it apparent that the Mattoon struc-



A well on the Illinois Central right-of-way southwest of Mattoon. This narrow strip of land about 200 yards long was overlooked by lease hounds and picked up later by an independent operator. Drilling was rushed in order to grab a spot in the ten-acre spacing pattern.



Typical cross-section of the Mattoon pool.

ture was one of the largest in the Illinois basin and further evaluation tests were advisable. Other tests were drilled but were dry holes, although A. F. Keating in July, 1943, completed the Uphoff 1 for 24 barrels of oil and 25 barrels of water, about 1½ miles northeast of the discovery well. Drilling around the Uphoff brought only marginal producers.

These factors were disheartening, and Carter, like many other operators, dropped some of the acreage regarded as less favorable. But the company maintained a strong belief in the Mattoon structure and kept a sizeable block. It made several attempts to promote other drilling on the flank of the structure but in the face of previous results no one was interested.

Craig 1 Strike

In order to induce further drilling activity Carter farmed out scattered parts of acreage regarded as fairly good prospects and retained a standard sliding scale over-riding royalty. As an outgrowth of this sustained interest, Joe A. Kull's Craig 1 in 26-12n-7e was drilled and completed last October to flow 428 barrels through 5/8-inch choke on a 24-hour completion test in the Rosiclare sand.

Here, near the crest of the Mattoon structure, after 5½ years of extensive effort and many dry holes, was the good well needed to swell interest to high pitch. It did. And although wells previously drilled in the south part of the Mattoon block showed that seismograph data had been reasonably correct, the Craig and other good producers subsequently drilled proved that the good pay was farther to the northwest and southwest.

While a ten-acre spacing pattern has been established for the pool, production has not been restricted by allocation. The 173 producers in the pool as of March 15 had a daily average production of about 12,000 barrels.

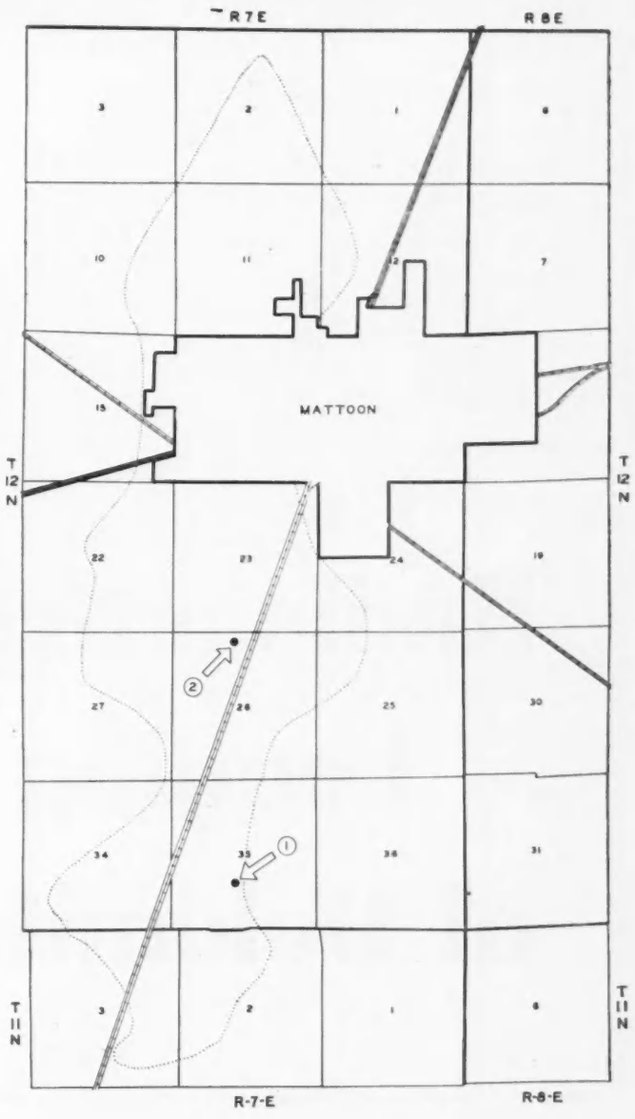
Most of the acreage in the Mattoon pool is held by Carter and independent operators and of the latter group the largest blocks are held by Walter Duncan, Kenneth Abshire and J. P. Booth, Dell Carroll, Joe A. Kull T. B. Dirickson, E. P. Jarvis, and Howard Gordon, et al.

Although early concentration of drilling activity was in the south part of the pool, the trend is northward now, following completion of several good wells in the north portion.

Drilling in the Mattoon pool involves no special problems. Driven by butane or diesel fuel and capable of reaching depths of 3000 to 5000 feet, portable rotary power rigs with jackknife masts are used to make hole and set casing, after which spudder equipment is moved in for clean-out. Average drilling time is about nine days per well.

About 2/3 to ¾ of the casing used on oil strings is seven-inch, the rest 5½-inch. Most of the surface casing is spiral weld. In multiple completions, aluminum alloy pipe is used opposite the upper formations when setting casing; then the alloy is removed by acid or caustic solution in order to make windows, after which the sand is shot with nitroglycerin.

Rock bits are used in drilling since the subsurface formations involve ordinary sand and shale conditions and generally are not as hard or tightly packed as in the south part of the Illinois Basin.



Map of the Mattoon pool, showing the city and railroads. Arrow No. 1 points to the location of the discovery well (The Carter Oil Company's Seaman 1-A. Arrow No. 2 points to Joe A. Kull's Craig 1, which brought the recent boom. Dotted line represents outline of field.

Average drilling and completion costs are about $15,500 per well, with rotary costs running at about $3 per foot and spudder at $150 per day. Production equipment, including pumping units, rods, tubing and tanks, costs around $3000, bringing total costs to a rough average of $18,500 per well.

Although some of the wells have been brought in on flow, these have had only short life, the one of the longest duration having flowed about 2½ months before being placed on pump.

Reservoir pressure measurements in the field range from 200 to 600 pounds per square inch in the Cypress and from 400 to 650 in the Rosiclare. It is assumed that original reservoir pressures were normal hydrostatic pressures for those depths. Although the trend is not definitely known, the short flow life of the wells strongly indicates a rapid pressure decline.

No Water Problems

Generally, the gas-oil ratio is estimated at 350 to 400 cubic feet to the barrel in the Cypress, and from 500 to 600 in the Rosiclare. Water problems with regard to production and disposal are nil, since there is no water in the Cypress, and only a slight amount in the Rosiclare. In the latter case the water is easily shut off and is of diminishing ratio.

A sizeable gas cap, covering perhaps more than 300 acres, was discovered in the Cypress sand in Sects. 26 and 27-17n-7e, one well having indicated ability to make an estimated 8 million cubic feet a day. Since the gas-oil contact is known, operators are setting pipe through the gas to obtain oil production from the Cypress. This gas may be used later for secondary recovery operations or may be produced for commercial purposes.

Pipe line transportation facilities have been installed in the field by two companies. Interstate Oil Pipe Line Company, handling about 85 percent of the daily production as of March 15, delivers to the Illinois Pipe Line Company's Montrose station, about 19 miles south; and Texas Empire Pipeline Company delivers to its own main line station about two miles north of Mattoon. Reversible flow enables Texas Empire to move the oil north or south from there, according to demands.

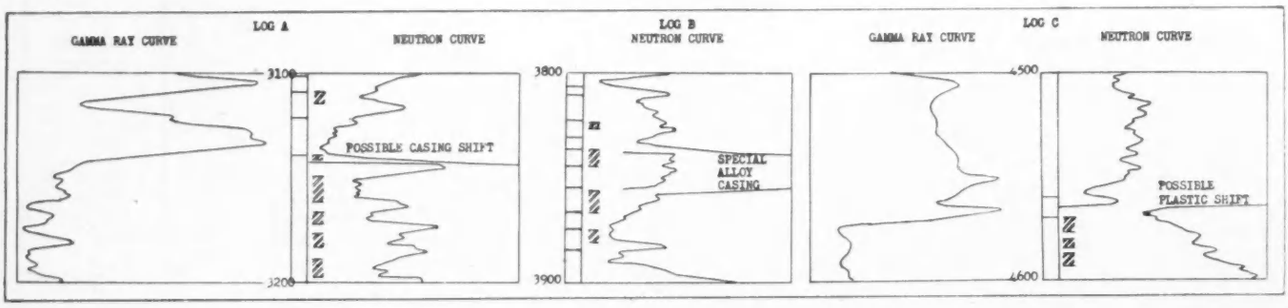
Both Interstate and Texas Empire are operating gathering systems in the field, and others being operated by Ashland Pipe Line Company, Kingwood-Breuil Pipe Line Company, Loudon Pipe Line Company, and Arrow Pipe Line Company.

Typical cross-section of the Mattoon pool.

FIGURE 1

Effect of Physical Well Conditions on the Neutron Curve.

Sensitivity Increases ⟶



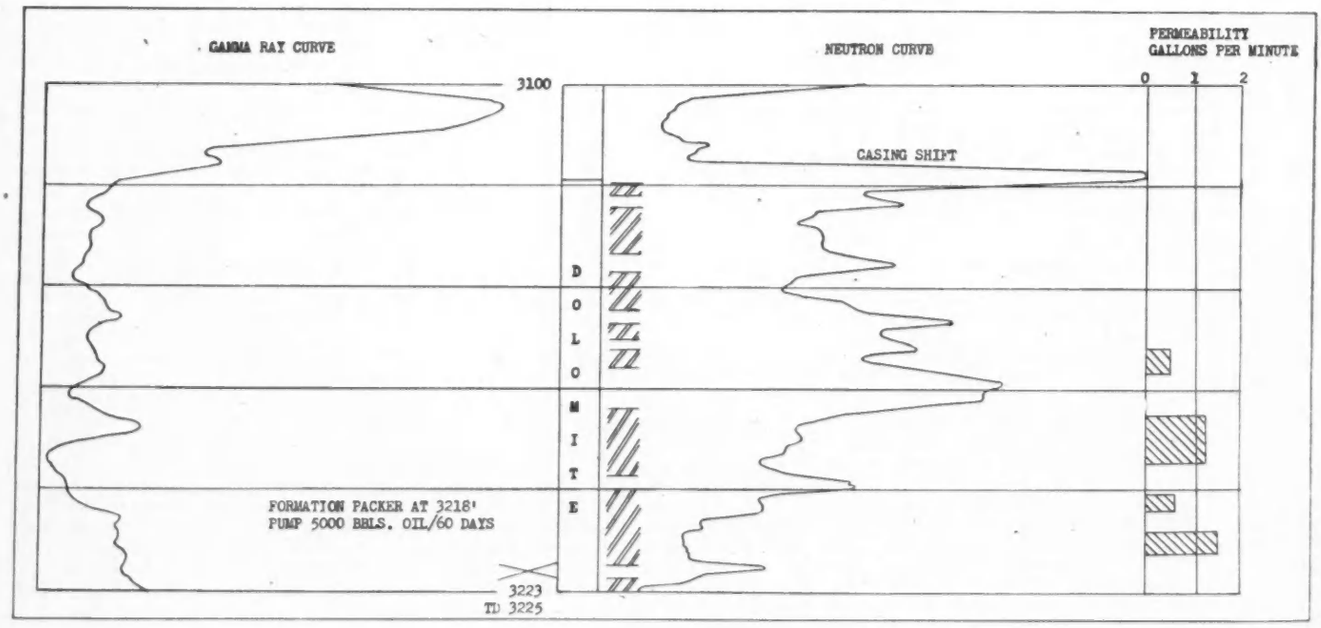
Radioactivity Logging of Dolomites

By V. J. MERCIER
Lane-Wells Company

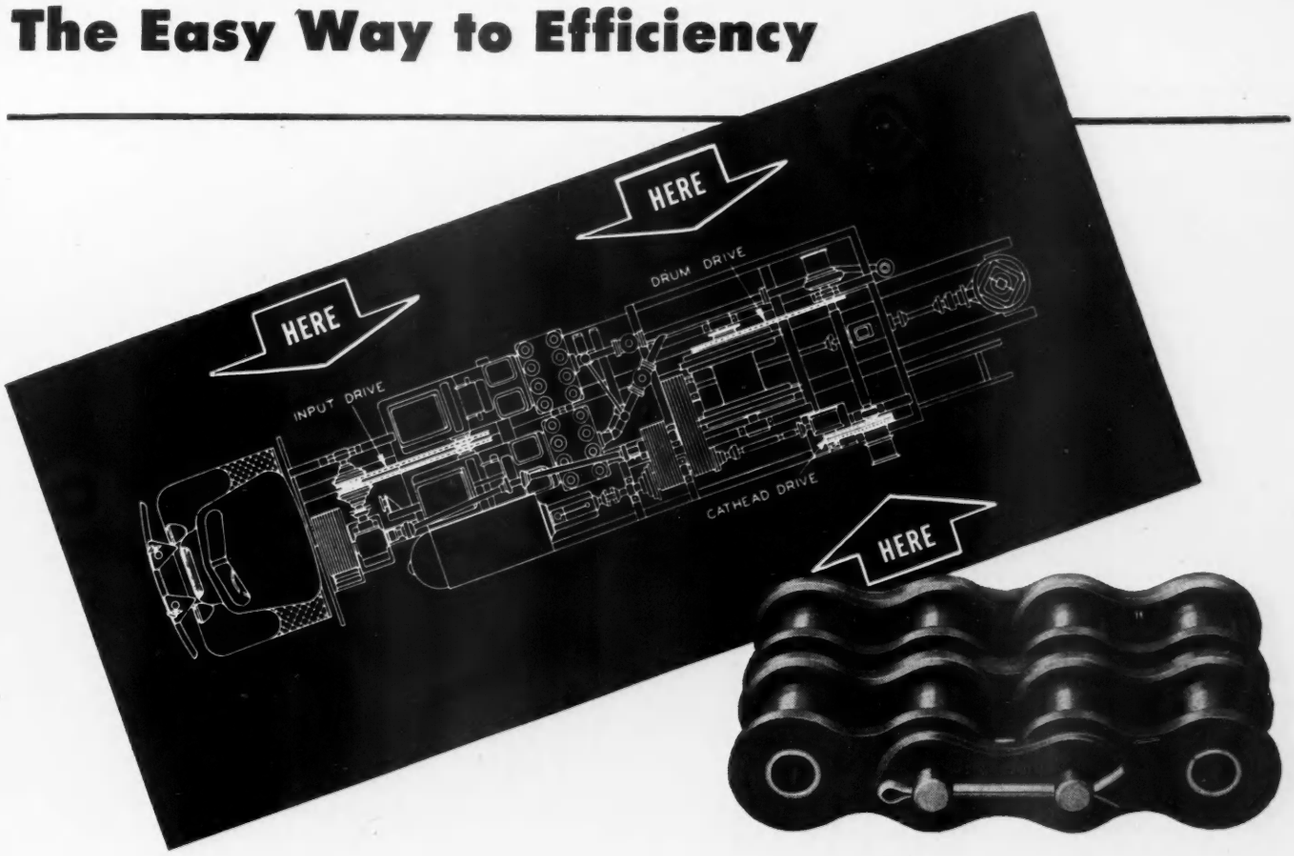
OPERATORS in Kansas and other areas are constantly confronted with perplexing and controversial problems in their determination and evaluation of the dolomites, such as are encountered in the Arbuckle, Viola and Maquoketa formations. Since these zones are among the most important oil producers in Kansas it can readily be seen that every means should be used to avoid passing up possible productive zones. Some operators in Kansas incline to the practice of setting casing on top of the Arbuckle formation and drilling in with cable tools, while others prefer to set through the formation and perforate for completion. Results obtained in wells surveyed by radioactivity, including both new and old wells, appear to support the latter. In all cases radioactivity well logs have materially aided many operators in properly evaluating the possibilities of the dolomites. Since many recent discussions concerning radioactivity well logging, especially in the use of the neutron

FIGURE 2

Sensitivity Increases ⟶



The Easy Way to Efficiency



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Remember, the easy way to efficiency and for dependable power transmission is to replace with Baldwin-Rex.

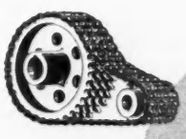

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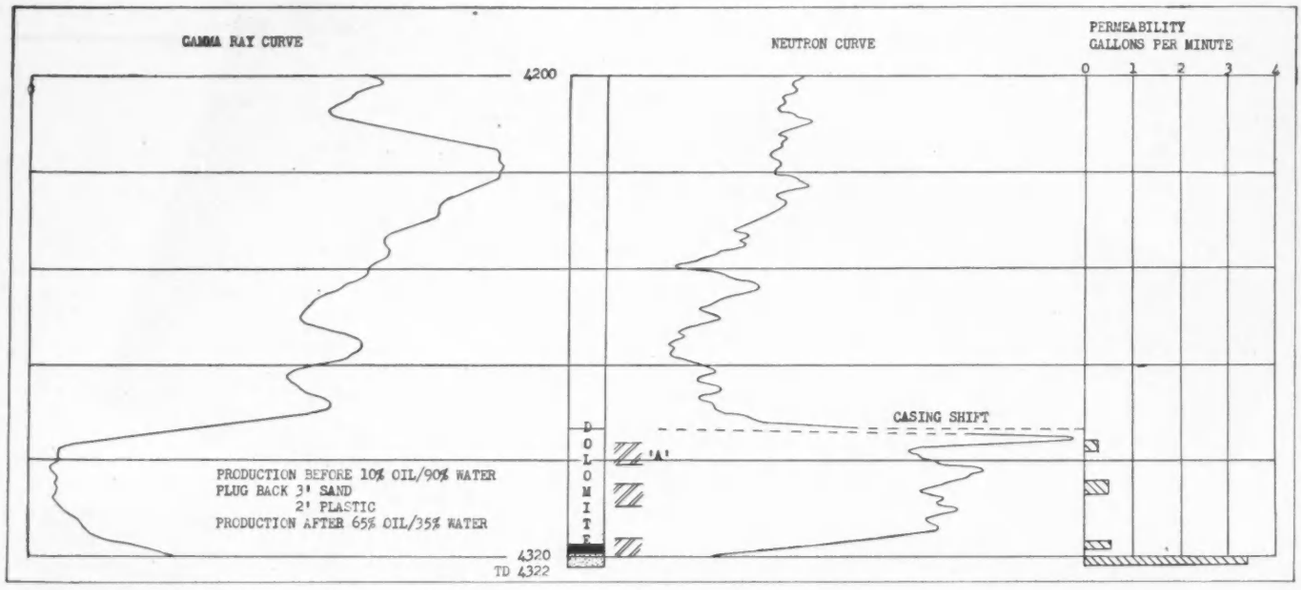
FIGURE 3
Sensitivity Increases ⟶

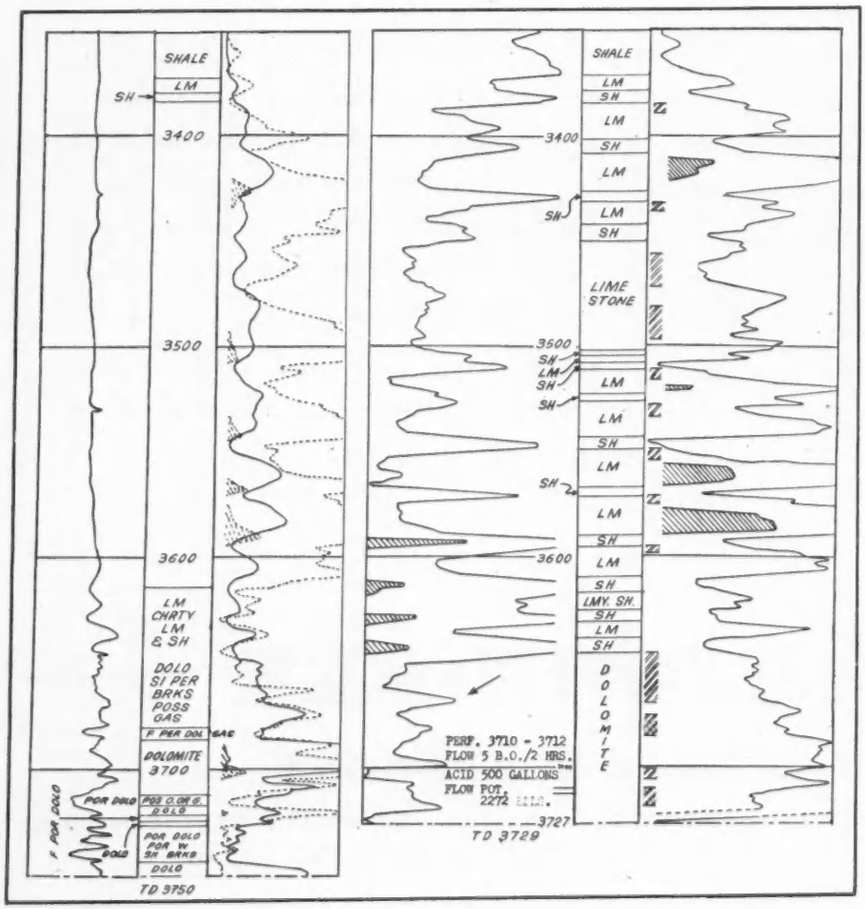


curve, have dealt with limestone applications, and the principles and equipment of the radioactivity instruments have been explained at length, it is the purpose of this paper to treat only with the problem under consideration.

Dolomite is described as a carbonate of calcium and magnesium and is believed to be of secondary origin, having been formed from ordinary limestone by the action of solutions containing magnesium. Because of this composition the neutron curve may appear slightly less sensitive than for a comparable limestone condition. Dolomite is weakly radioactive and cannot be distinguished from limestone by radioactivity measurement alone and on a radioactivity log it will be recorded toward the left margin of the gamma ray record as shown in Figure 1.

The value of the neutron curve cannot be given as an established position on the record as has been done by the gamma ray because the neutron curve is indicating possible porous zones by the action of the fast-moving neutrons. There is, however, a need for explaining certain actions of the neutron curve in recording physical changes in the well.

FIGURE 4
Comparison of Electrical and Radioactivity Surveys.



Well Record Valuable

Because the neutron instrument has as a part of its operation a source chamber emitting fast-moving neutrons, sudden physical changes in the well create sensitivity shifts in the mean or average line of the curve. For example, where a neutron instrument passes from the open hole of a well into a cased hole, a shift to the left, or low sensitivity side, is obtained. Reason for this becomes easily apparent when one visualizes the steel casing enveloping the instrument, and the casing acting as a partial shield to the passage of the neutrons. The efficacy of the neutron curve is not impaired because the loss of sensitivity due to the casing is easily compensated by an increase in amplification. It therefore becomes apparent that most physical changes in the well will be marked by a shift in one direction or other. It is thus to the benefit of the well operator to provide as complete a record of the well being surveyed as possible. Knowing the approximate depths at which these physical changes should occur, the radioactivity technician can make a correct analysis and interpretation of his record.

Figure 1 illustrates effectively the occurrence of some of these physical changes in well conditions and how they have been interpreted by the radioactivity log. Log "A" of Figure 1 shows an old well in which the casing was set on top of the Arbuckle and the well drilled in by cable tools. Top of the Arbuckle dolomite is clearly identified by the gamma ray curve at 3140 feet and the location of the casing shoe is apparent on the neutron curve by the shift at 3144 feet. Several porous zones are

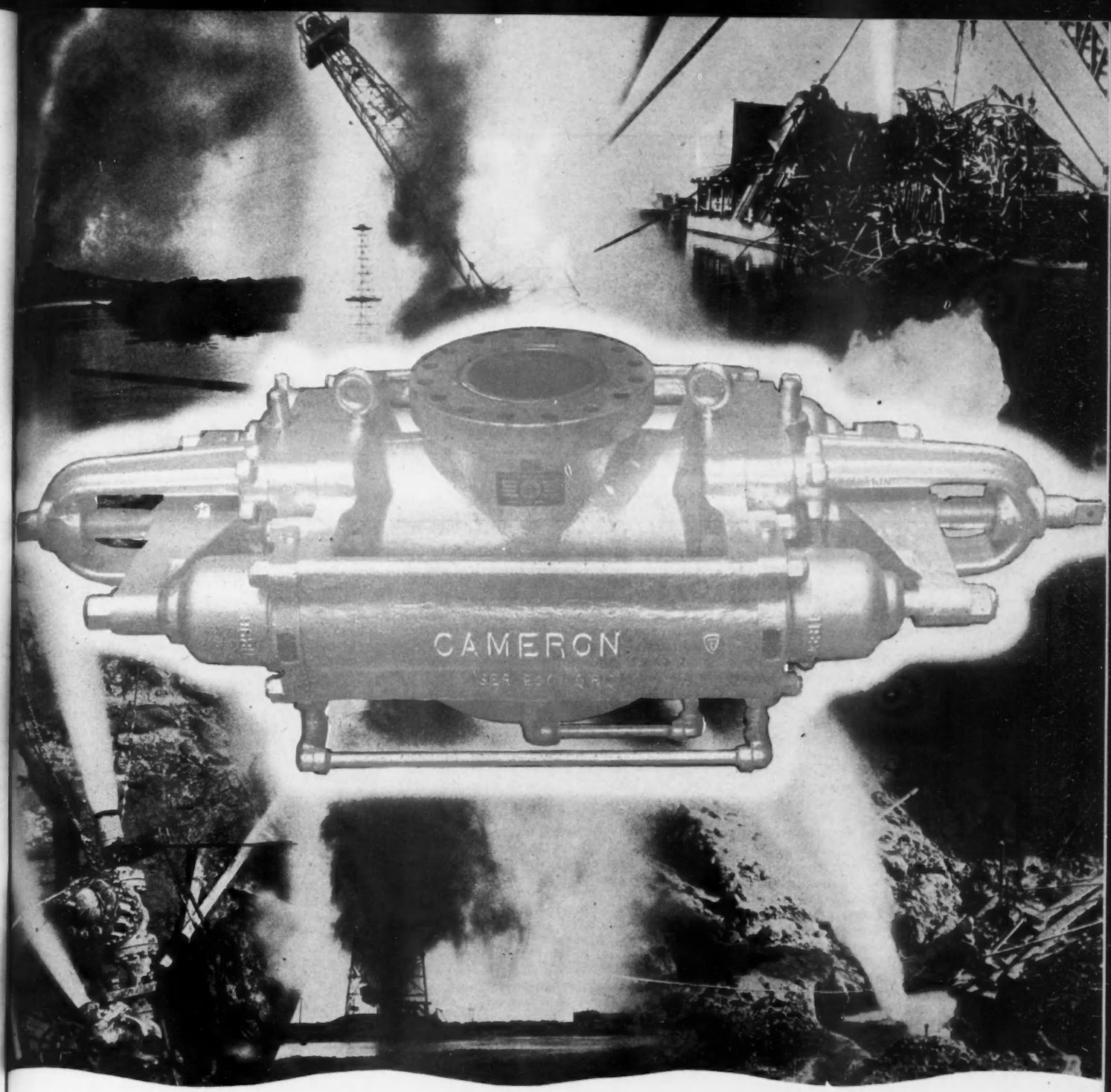


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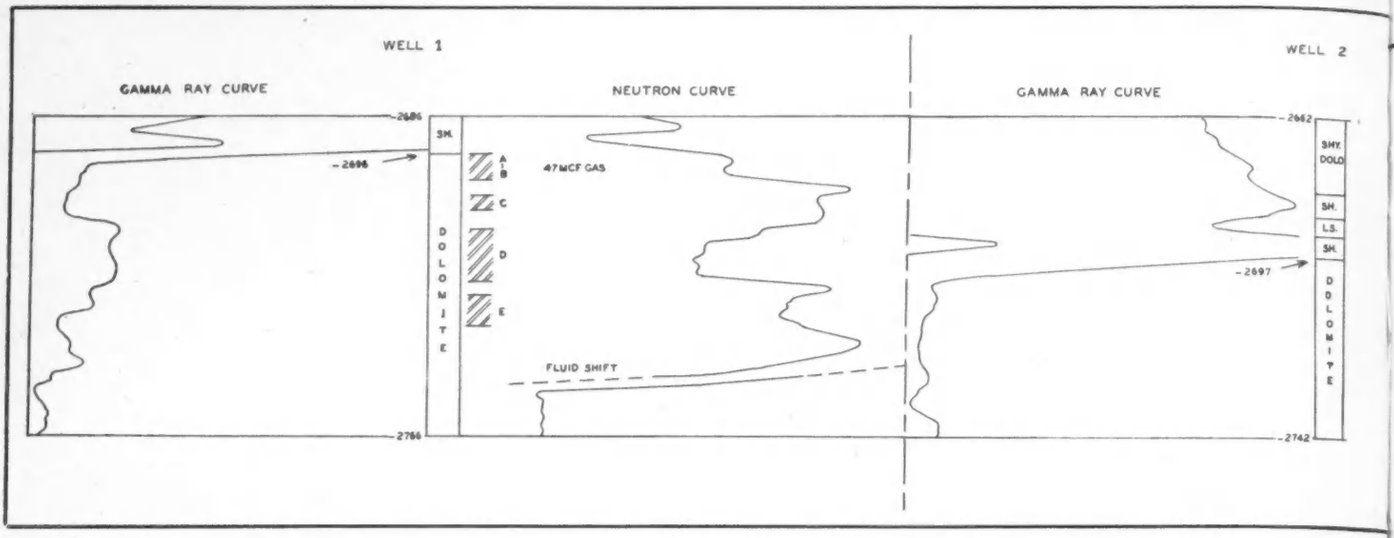
FIGURE 5



shown by the neutron below the casing; also, one small zone is seen behind the casing. In this well, water encroachment from one or more of these porous zones has necessitated a plugging job in order to recover oil production left in the remaining zones.

Log "B" is a section of a log from a well in which one 20-foot joint of special alloy pipe was run in conjunction with 5½-inch, 17-pound steel casing. The top and bottom of this joint of aluminum casing is clearly shown by the shifting of the mean average line of the neutron curve from 3838 to 3848 feet. Because of a measurement error during the casing run this joint of alloy casing was "lost" and the operator was dependent upon the radioactivity log to accurately locate its depth.

Log "C" was taken after the well had been perforated and after more than 250 gallons of plastic had been used to squeeze off the lower perforations. Plastic contains hydrogen, carbon and oxygen, and since the neutrons emitted are absorbed mostly by hydrogen, it is believed that the plastic in this amount caused the neutron curve to be offset from its average line below 4564 feet. It is noteworthy that although the plastic absorbed an abnormal amount of the neutrons emitted, a true picture of the porosity is still given by the log.

Logging the Arbuckle Dolomites

To give a representative report on the use of radioactivity well log in the dolomites of Kansas the following logs from throughout the state have been selected and it is believed that the illustrations and a brief case history presented with each will be more clearly understood than a lengthy discussion on the subject.

Figure 2 is the log of a well in Rice County, Kansas, drilled years ago when the standard practice of completing a well was to set casing on top of the Arbuckle dolomite and drill to a minus datum with cable tools. After several years of good oil production with the entire formation open, water encroachment became so great that the well had passed its economical operation point. This necesistated a plug-back program in order to restore oil production. However, it was the opinion of certain personnel of the company that there was still some oil to be recovered from one of the lower indicated porous zones. A combination of radioactivity log was therefore run on the well and this is the log as shown in Figure 2. A permeability survey was also run, the permeable zones shown by this survey being plotted to the right of the radioactivity log.

A short study of this correlation reveals a porous zone from 3220 feet to the total depth which the permeability survey does not indicate. A formation packer was run and set seven feet off bottom, the well put on pump, and the static level in the annular space continuously checked to insure that the packer was not leaking. The well pumped 5000 barrels of oil in 60 days. Acidizing was attempted on this lower zone with 250 gallons but the acid circulated around the packer through the formation and the operator reluctantly plugged off this zone and the water zone immediately above to recover the oil from the top porous zones. Perhaps, later, after the oil above is exhausted and all the water is successfully squeezed off the operator can drill out to this lower zone and recover the oil. This example would seem to substantiate the theory expressed by some geologists that the Arbuckle dolomite contains several pay horizons, each with its own water drive. If this is true, it would appear to be better practice to set casing through the Arbuckle and produce the zones one at a time, plugging or squeezing off the lower pays as they become depleted. Support of the same theory appears in work done in the Carmi pool of Pratt County, Kansas.

The well in Figure 3, which illustrates another Arbuckle completion with the casing set on top, is across the state in Pratt County. Practically the same set of circumstances here obtain, the porous zones being indicated by the neutron curve while plotted to the right is the result of a permeability survey. This well was plugged back with three feet of sand and two feet with a plastic; the production ratio of 10 percent of oil to 90 percent of water was changed to 65 percent of oil to 35 percent of water. However, the total fluid withdrawn is not now quite as large. Some operators holding offset production do not agree with this plugback test, and believe the water is coming from porous zone "A." As proof they cite wells completed with this zone "A" sealed off behind the casing. The wells that do not have this zone shutoff have not had any water trouble while on the same lease wells with this zone "A" open have had serious water encroachment. If this supposition is true the case cited presents still further evidence that the dolomite should be cased off and gun perforated.

Reworking Old Wells

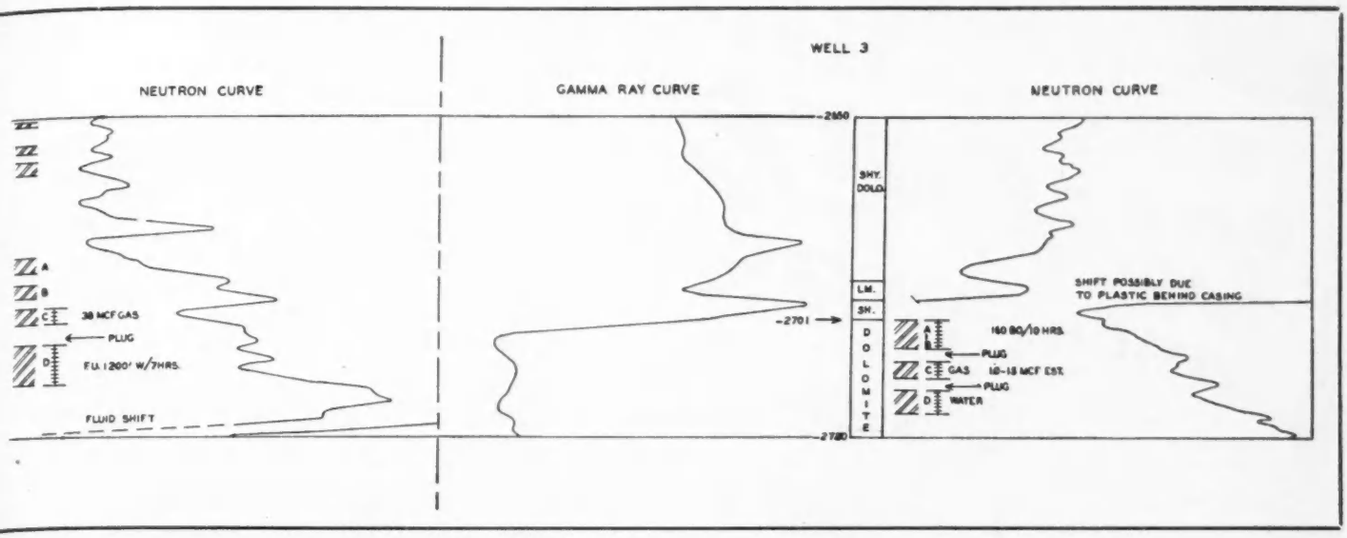
Regardless of theories and suppositions about the behavior of the pay horizons of the Arbuckle dolomite, the radioactivity well log has eliminated the guesswork in reworking old wells. Since the neutron curve can distinguish the porous zones, while at the same time locating the casing shoe, and the gamma ray curve can clearly identify the formation, the well operator has at his disposal a complete picture of the producing strata. He can then determine to the exact foot how much he will have to plug back to eliminate the individual zones. Should the operator have any question in his mind about the probable future recovery from one of the lower zones he can, if he chooses, protect that zone by a sand or gravel pack placing his plug, cement or plastic, immediately above this zone. This has been done as shown in Figure 3. Three feet of sand were used to protect the lower porous zone "C" with a plastic seal placed immediately above to seal off the zone completely. Results of this test were gratifying enough to operate the well at its present ratio of 65 percent oil and 35 percent water.

Successful plugback workovers in the Arbuckle dolomite have been too numerous to tabulate here. By successful, it is meant those wells in which the encroaching waters have either been completely eliminated or so materially reduced that the well has once again become a profitable oil producer.

New Well Surveys

Perhaps some of the best examples of the new well surveys by radioactivity are the new pools in Barton, Rush, and Pawnee counties, Kansas.

In these localities the Arbuckle dolomite carries gas, oil and water. To complete the well successfully, the operator wants oil production with a low gas/oil ratio and no water. To attain this goal requires accurate measurements because



of the confined area which it is permissible to open. The more successful wells have been surveyed by radioactivity and gun perforated for completion. The common procedure in this area has been to survey the well by a radioactivity log after the casing has been landed and cemented and the well cleaned out. From the interpretation provided by the radioactivity technician immediately following the survey, and from other information correlated with the radioactivity log, the zone to be opened is determined. Using the same type cable and hoisting equipment for gun perforating operations, further to assure the measurements, the well is gun perforated and communication obtained with the desired strata.

Figure 4 is an example of operations in this area. In this illustration an electrical survey has been compared with radioactivity survey on the same well. It will be noted by this comparison that more detailed information is provided by the radioactivity log; however, the correlation of the neutron curve and the second curve of the electrical survey is very good in this instance and both surveys have proven of value to the operator. Both the radioactivity survey and the electrical survey were developed and brought into popular use because there was need for such tools in the industry. The sagacious employment of both surveys in this particular instance resulted in a very favorable completion, as is shown in the illustration.

One of the prime advantages gained by casing off the complete section can be demonstrated by the operations in the Ryan pool of Rush and Pawnee counties. This pool, comparatively small as oil pools are considered, was discovered during 1945. It has already been rather thoroughly defined on all sides; but because the edge wells are cased through, it permitted these operators to perform squeezing and plugging operations which sealed off the water and gained small edge-production.

A complete core was taken of the dolomite on one of the wells in this area, and a correlation made with the radioactivity log of that well proves the reliability of the survey. Close study of this core verified the interpretation of the radioactivity well log. One of the questionable points, marked with an arrow in Figure 4, was thought possibly to be shale. The core analysis shows this zone to be a conglomerate of chert and glonconite which would appear as slightly more radioactive than the pure dolomite.

In the southern part of Kansas production has been discovered in a dolomite of the Ordovician system. Some geologists claim this to be a Maquoketa dolomite, while others call it a Viola dolomite. Whichever series or group this dolomite belongs to, it is easily logged and interpreted by the radioactivity log. In Figure 5 are shown three of the wells of this area, each separated from the other by at least one mile. Well 1 was perforated from 2696 to 2708 feet and made 1½ million cubic feet of gas natural. After acidizing with 2000 gallons the well obtained a potential of 47 million cubic feet of gas. This porous zone indicated by the symbol and identified by the letters A-B was the only zone tested in this well.

Well 2 was perforated first in the zone "D" and received a fillup of 1200 feet of water in seven hours. A bridging plug was set at 2720 feet to shut off this water and the well perforated in zone "C." The well came in for 9 million cubic feet of gas natural through 11 perforations. After acidizing with 1000 gallons, the well obtained a potential of 38 million cubic feet of gas.

Well 3 History

In Well 3 is again pictured the well used in Figure 1 as "C." History of the well was roughly as follows: Perforated in zone "D" the well made water and some gas; several tests were made at this level and plastic was used in abnormal amounts to squeeze off this water. After this zone was tested and a water shutoff obtained, zone "C" was perforated and an estimated 10 million cubic feet of gas was obtained. This was killed with several thousand feet of water and plastic was again used to squeeze off. It was about at this point that the radioactivity log was run and the record obtained is shown here. The operator, after correlating his information and previous testing with the log, moved up and perforated the zone designated "A-B" which swabbed 160 barrels of oil in ten hours.

It will be noted in Figure 5 how easily the top of this dolomite is recognized on the gamma ray curve. The neutron curve, however, requires some study. On Well 2 four distinct porous zones have been indicated in alphabetical sequence from top to bottom. Correlating Well 1 with Well 2, it is found that zones "A" and "B" have become one zone. In Well 1 zone "C" retains its identity but apparently from the position on the curve it is not nearly as good as a zone, as in Well 2 zone "D" retains its identity with what would appear to be an increase in possible porosity. Well 1 also has an extra zone designated "E."

Correlating Well 3 with each of the others in Figure 5, it is found that zones "A" and "B" are again unified, zone "C" remaining as an individual zone. Zone "D" also evident as an individual zone.

The information gained from the tests of these wells and other wells in the area would lead to the belief that these zones are independent of each other, and that the break between the zones "A-B" and zone "C" is impervious. Further testing throughout this area will eventually give the correct answer.

It has herein been attempted to outline what has been done by the use of the radioactivity log in Kansas dolomite sections. Whether these dolomites contain porous permeable zones interspaced with dense impervious zones cannot be proved by radioactivity well logs alone; but the information obtained by these logs and the tests following certainly bear out the theory. It is evident from the logs and examples given here that more knowledge can be obtained by drilling through the dolomite and gun-perforating than by using the cable-tool method. Results of the plugbacks and workovers in open dolomite holes would, it seems, prevent the oil operator from continuing to complete dolomite wells in this manner.

Lion Effects Lease

A five-year lease of the Ozark Ordnance Works, Eldorado, Ark., to Lion Oil Company, parent of Lion Chemical Corporation, wartime operator of the plant was announced by the War Assets Corporation.

Rental under the lease will be based on annual production, it was said.

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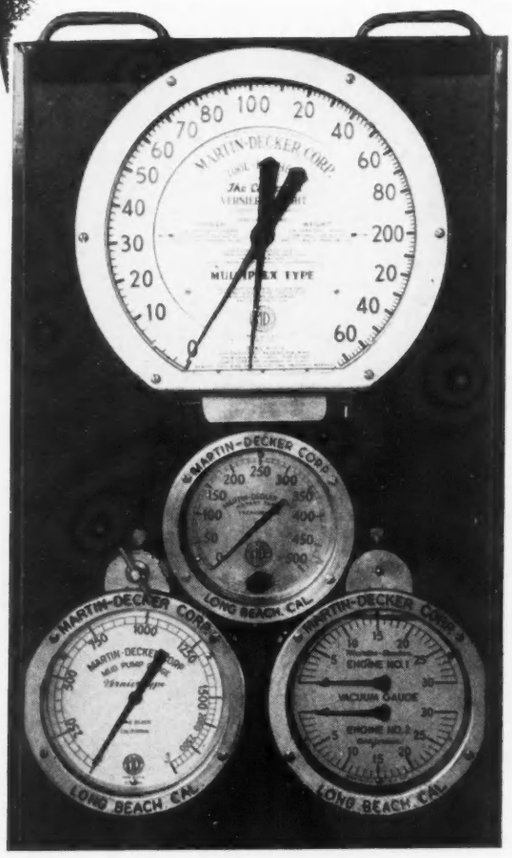

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Test Flow Chamber

Cuts Oil Spray, Improves Initial Flow Inspection

By GILBERT M. WILSON, Staff Writer

ONE of the serious problems confronting the operator when drilling a well inside the city limits or when the location is near habitated areas, is that of controlling oil spray when the well is first brought in, or is under open flow test through the formation tester. Serious damage suits can result if the wind happens to be in the wrong direction, typical of these examples being the case of one California operator who complained that he had been forced to repaint three times a certain nearby house and garage, merely because he had neglected to provide suitable shields or housing to deflect or confine oil spray coming from his well.

One drilling contractor developed a simplified system of conducting drill-stem tests which enables him to observe flow results, but which at the same time practically eliminates possibility of oil escaping to settle over a wide area and cause damage to nearby installations. The two-inch line coming out of the well cellar connections was extended out to one side of the location where it was connected into a small high-pressure separator. A two-inch gas exhaust line some 200 feet long and suitably anchored, branches off at that point to exhaust to atmosphere well out of danger of rig installations. Oil then flows on through an increasingly greater size pipe, the last joint of which has perforations for discharging fluid into the sump directly beneath.

Perforated Chamber

Some 75 feet down stream from the trap, the two-inch oil line is enlarged to 6⅝-inch, the latter being a 75-foot length of salvaged casing which is mounted on pipe leg supports. This pipe reaches well over to within the confines of the walled test sump. At this point the line swages out and is flange connected into a 15-foot length of specially prepared 13-inch casing, the latter spanning the sump and resting on an elevated support made of truncated A-frames made of two-inch pipe. This piece of large diameter casing is welded closed at the distant end, and around the lower approximately ⅓ of its periphery are cut out numerous large size perforations, the perforated interval extending the length of the chamber.

Use of this test device has materially reduced possibility of the flow line spraying oil or gas over the vicinity of the location. Oil or gas and mud fluids are safely confined to the chambers, yet it is possible to observe at close range the nature and quantity of initial flow into the small sump. The progressively larger sizes of conductor pipe effectively dampens violence of the heading, permitting gradual expansion of the gases before reaching the openings over the sump.

The unit is easily dissembled for transporting from one location to another, the large pipe section with its legs attached being taken apart at the flange connection, and the 6⅝ section carried as a second principal unit. The small separator is not anchored to a permanent base, the unit being set on planking and guyed down with several wire lines which are stretched out and attached to two-inch pipe stakes driven into the ground.

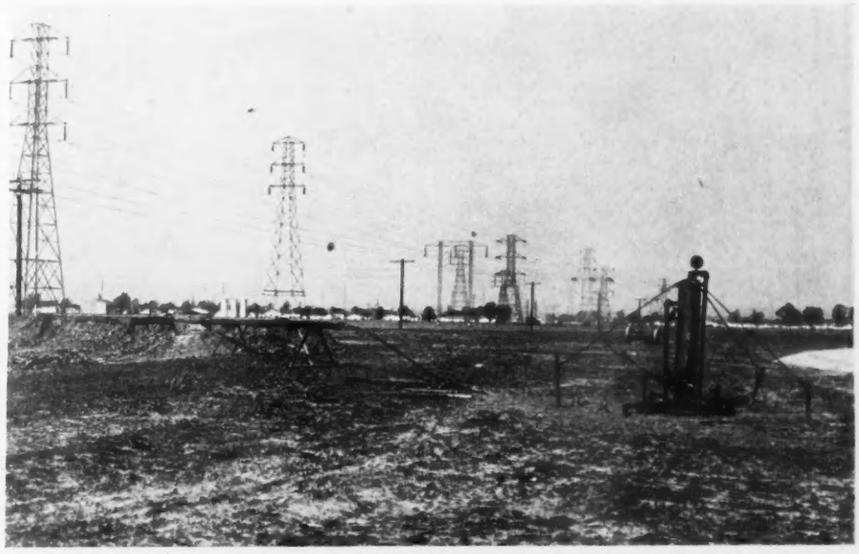


Figure 1. General view of the test separator, gas line (extending beyond trap) and oil line leading to special test sump. Note that oil line enlarges from 2-inch to 6⅝-inch and finally to the perforated 13-inch casing spanning sump.

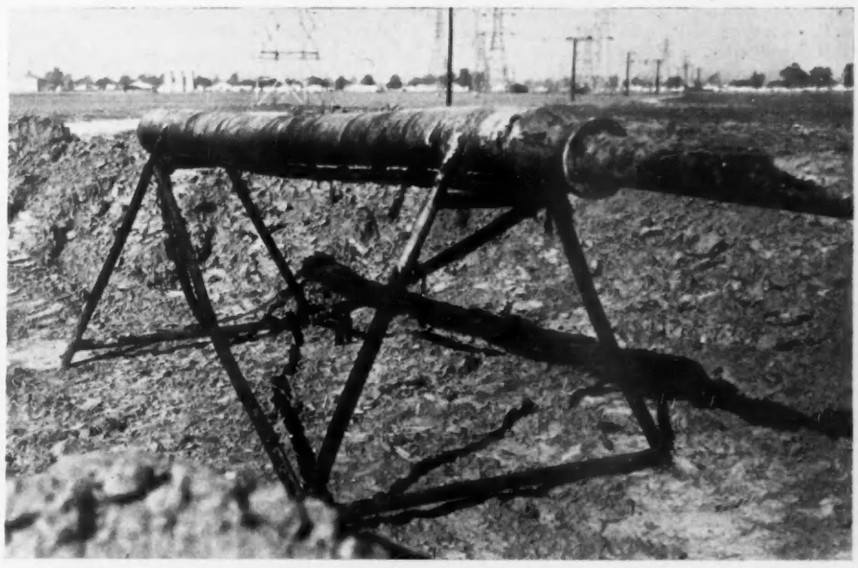


Figure 2. Closeup of perforated 13-inch casing which permits close inspection of initial flow without danger of oil spraying over wide area during heading periods. Detachable pipe units, with legs attached, are moved from one well to another, special sump being dug for this purpose.

Engineering of Oil Well

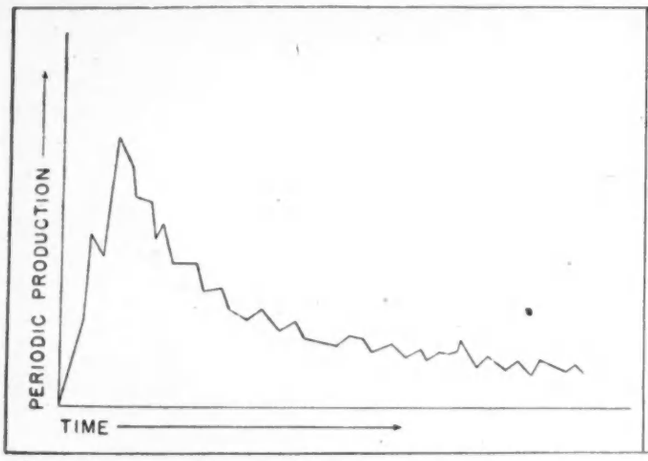


Figure 1. Periodic oil production vs time.

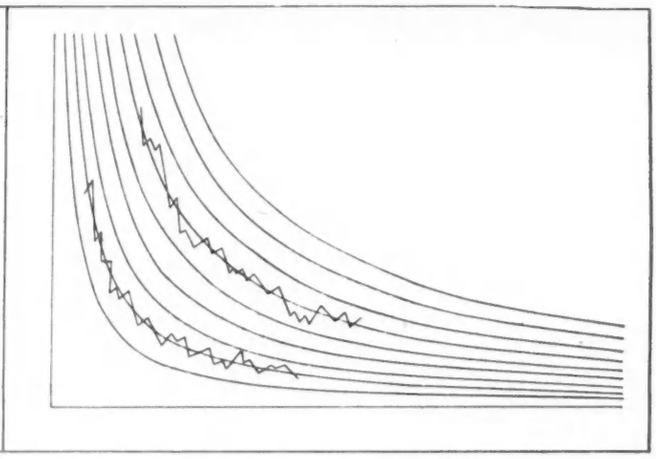


Figure 2. Family of rectangular hyperbola curves.

By WILLIAM E. SCHOENECK
The Ohio Oil Company

EXTENSIVE studies have been made and much has been written on procedures for prospecting, drilling, completion, production and repair of oil wells, but there is need for a study of the procedure that should be followed when considering the abandonment of a well. The production from numerous well bores of a fluid material (a circumstance peculiar to the oil industry) that is continually decreasing in quantity leads to an increasing ratio of operating cost to production.

It is for this reason that oil fields are not abandoned as a whole and detailed consideration of each well is required before it can be determined whether more is being expended than will be returned on any well or lease in question. It is the purpose of this paper, therefore, to compile, correlate, and present all matters worthy of consideration in the problem of oil-well abandonment; to suggest interpretative procedures based on such compilations, to the end that reliable estimates of reserves and life may be obtained; to show, as a result of such interpretative procedures, the possibilities for corrective measures conducive to economical production, thereby extending both profitable reserves and length of life.

Scope and Approach

Compiling data and outlining a study having the complexity of the problem at hand are naturally subject to the personal experiences of one who undertakes the study. However, the chosen approach and grouping of the subject material may be helpful in the consideration of abandonment problems. Consideration has been given to wells that make gas and water incident with the production of oil; but consideration has not been given to either gas wells or condensate-producing wells, for wells of the latter type have sufficient problems to warrant separate investigation. The major subdivisions of this paper—physical considerations and economic considerations—do not imply that either of these phases can be considered independently, but rather that the two are mutually dependent and are the component parts of an engineering study.

Physical Considerations Involved

Completion Data. Consideration of the physical oil well begins at the time of drilling and any investigation for abandonment should include a search into all development records available. Wells that have been completed more recently will have better records than older wells. Inadequacy of information on old wells should not discourage an investigator from making his search as exhaustive as possible.

Data on drilling of any well consist of drillers' logs, samples, cores, core analysis, electric logs, drilling time, drill-stem testing, mud analysis, and other information. From the completion record of the well, information on the casing and cementing program, perforating, shooting, acidizing, reaming, and the use of liners can be found.

History. The second type of record that is kept to a greater or lesser degree on each well is the history of production, operation, and repair.

The lease production record is usually a composite of the records for all wells on the lease. Production records on old wells, or wells that have been sold from time to time, may not be available, and for these such information might be obtained from state production records, tax departments, or pipe-line companies. In many cases, periodic tests of individual well production are made, and these are most valuable in determining production decline history.

Unless gas production is sold for fuel or delivered to a plant for extraction of gasoline, it is ordinarily difficult to find decords of either periodic or cumulative gas production. However, gas-oil ratios measured at intervals are invaluable and quite usable in determining estimates of total gas production.

Because ordinarily no commercial value is attached to salt water produced with oil, most information of this type is estimated. Periodic tests of water-producing wells are made where the best operating procedures are followed, and the results obtained furnish excellent data for analysis.

The history of production of paraffin, sand, and salt is likewise invaluable information to have when considering abandonment. Records of lifting equipment operation are not too often available, but in some instances might hold the key to excessively high lifting costs. Records of well repair and workovers bear close inspection for the knowledge of such can be used in determining the feasibility of future repair work in order to continue production and prevent abandonment.

Interpretative Procedures

Curves. The interpretation of the usable data is the most important phase of an abandonment study. The two most sim-

Abandonments

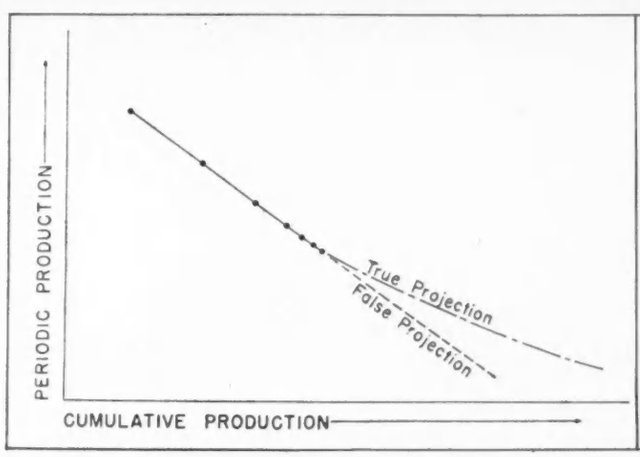


Figure 3. Periodic production vs cumulative production.

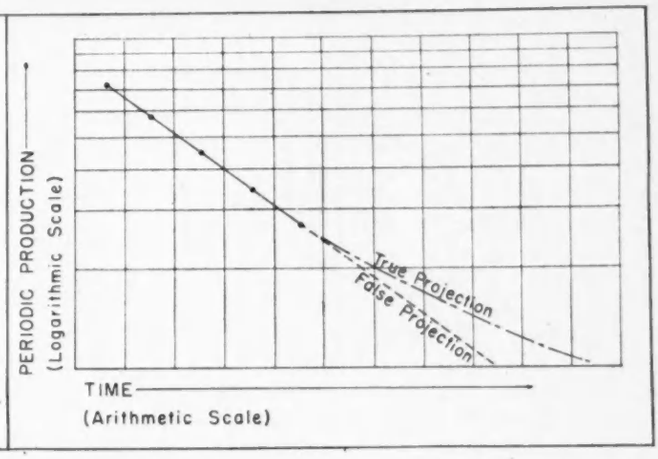


Figure 4. Periodic oil production vs time (Semilogarithmic scale)

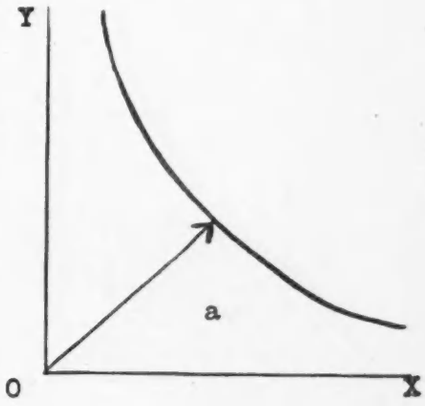
ple and fruitful means of analysis are the use of graphical representations of data and trends, and the use of maps reflecting special features of the wells, leases, and fields under consideration.

Plotting of oil production in graphic form, together with the interpretation and use of the resultant trends or curves, is of primary importance. Where production is not restricted, such curves represent the maximum ability of the well to produce from the day of its completion to the time of abandonment and reflect to some extent the physical behavior of the reservoir and well. Curves can be projected into the future with very reasonable accuracy. Cutler's work[1] contains the fundamentals on decline curves. They have both theoretical and practical application only in reservoirs that are predominantly gas drive.

Plotting of periodic production versus time on arithmetic coordinate paper results in the familiar decline curve shown in Figue 1, which is hyperbola. The character of the curves on individual wells varies widely, and extrapolations

$$XY = \frac{a^2}{2}$$

are often difficult, but the following procedure for projection has been devised and has proved relatively successful in a number of cases. The equation for the rectangular hyperbola is:



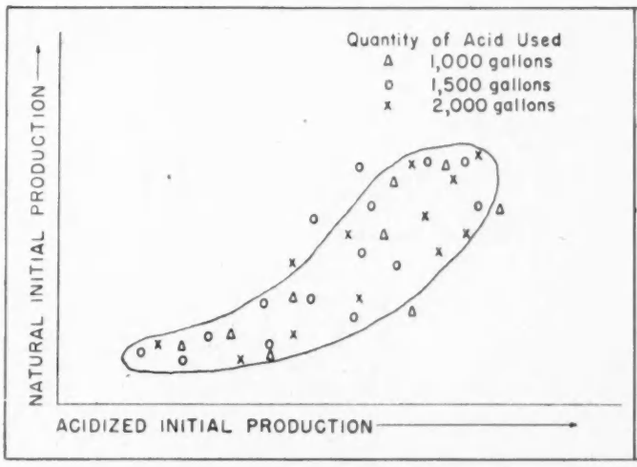


Figure 5. Natural initial production vs acidized initial production.

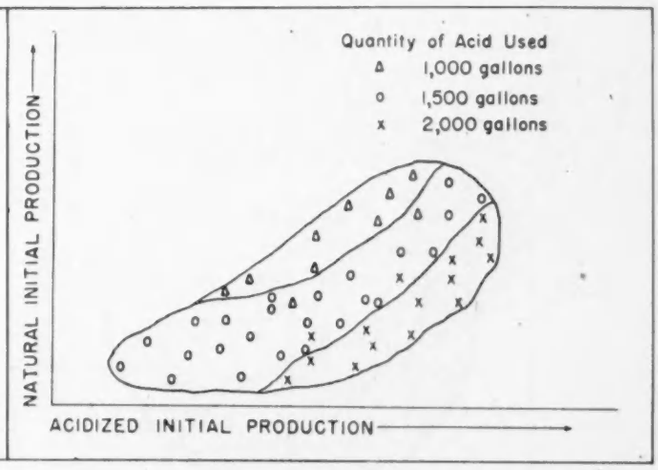


Figure 6. Natural initial production vs acidized initial production.

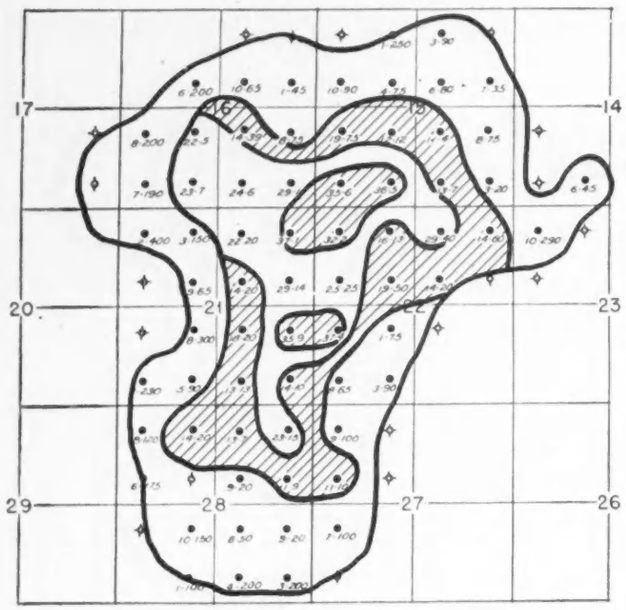


Figure 7. Daily field oil and water production.

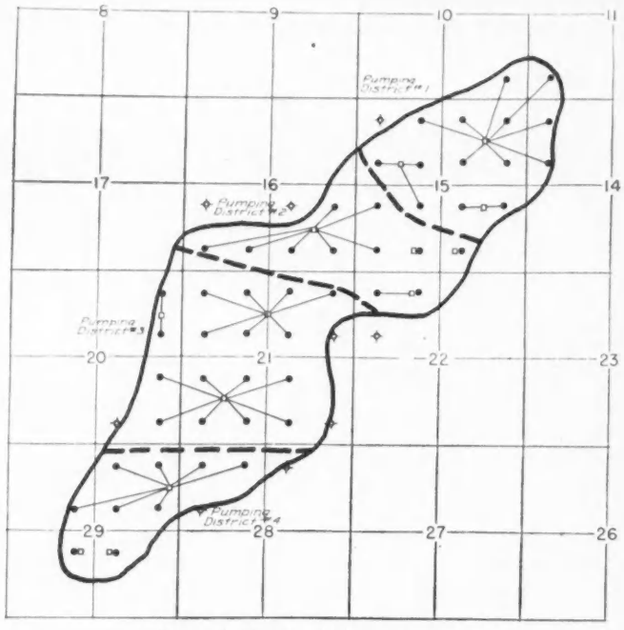


Figure 9. Map for lifting equipment.

where X distance on abscissa,
Y distance on ordinate,
a distance from origin to point where X=Y.

A family of curves, as illustrated in Figure 2, can be plotted from this equation by varying the values of a. The plotting of production of various wells on translucent paper, superimposing the zero production line on the abscissa and moving the family of curves either to right or left until the hyperbola most closely agreeing with the production decline is obtained, results in the conformity to actual periodic production curves as illustrated by the two examples in the same figure.

Periodic production plotted versus cumulative production on arithmetic coordinates is also used for predicting future production and length of life. Such a graphical method has no theoretical basis, but it is used because in some cases an apparent straight-line relationship results from the progressively decreasing distances on both the periodic and cumulative scales. This method results in false projections, which are too low, as illustrated in Figure 3.

The curve of the rectangular hyperbola plotted on logarithmic coordinates is a straight line and extrapolation then becomes a simple procedure. Inaccuracies can result from the use of logarithmic coordinates because the projected answer obtained depends upon the choice of position for starting the plotting.

An undistorted time scale (abscissa) is preferable for periodic entry of production records. It is the choice of the non-technical executive and is desirable in analyzing small variations in production. Semilogarithmic coordinate paper is also employed because the time scale is not distorted and because such coordinates do tend to straighten out curves, supposedly simplifying projections. A straight line on this type of coordinate paper (Figure 4) signifies a constant periodic percentage decline, which is not only theoretically incorrect for oil-well production curves but also in practical application leads to the same false projections as in Figure 3.

Other Graphic Studies. A graphic representation plotting natural initial production versus acidized initial production is suggested to determine the feasibility of reacidizing old wells before abandonment. Figures 5 and 6 illustrate examples of such usage. Figure 5 indicates that there is no relationship between quantity of acid used and the increase in productivity whereas Figure 6 indicates generally that the use of larger quantities of acid results in better increases in production. Although it appears that there is little reason to expect an increase in production from reacidizing in the case of Figure 5, these wells in Figure 6, originally acidized with smaller quantities, might be made more productive by reacidizing in their later life.

Maps. The behavior of any well is de-

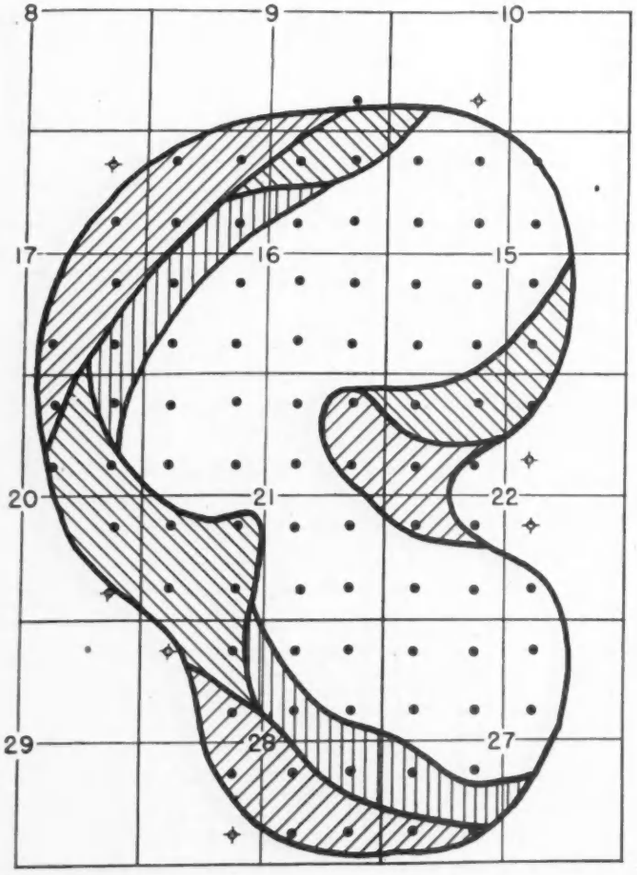


Figure 8. Water encroachment map.

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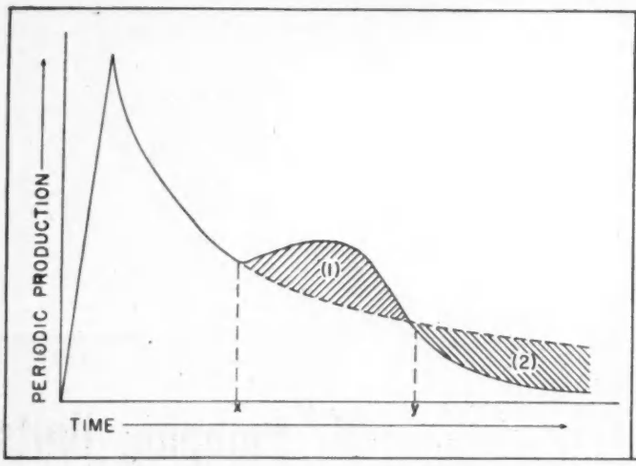


Figure 10. Effect of acid on oil production.

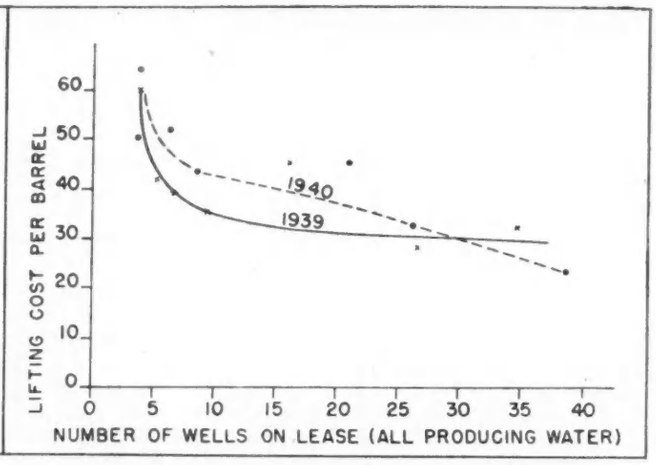


Figure 11. Lifting cost per barrel vs number of wells on lease.

pendent upon the current nature of the reservoir from which it is producing, and even more particularly on the location of the specific well in the reservoir; therefore study should be given not only to the characteristics of an individual well or lease but to the field as a whole, or at least to a large area surrounding the tract in question. One of the best means for such analysis is to prepare maps that visually correlate and many times explain that which might otherwise go unanswered. Several types of maps can be used to good advantage, depending upon the nature of the problem.

In the map in Figure 7, daily oil production and then daily water production are plotted under each well location.[2] The interval between the isoproduction lines employed is 10 barrels of oil per day, reflecting a general gradation from the lesser productive areas to the greater productive areas. Little information was available or original sand conditions in this particular field. Note that an area of low productivity completely surrounded the portion of the field still productive on the date of study, and it was concluded therefrom that leases wholly within this area had little chance of maintaining, let alone improving, their production. Some leases under consideration, however, were in areas of both high and low productivity, and it was decided, after considering the economics involved, to abandon only the wells with the low producing capacity. The map also emphasized that large water production was prevalent only on the edges of the field.

The map in Figure 8 illustrates the general type of map which may be employed to trace the periodic lateral encroachment of water in a field.[3] Wells starting to produce water in any one quarter of a year are grouped. Such maps aid in determining whether water production in any well is normal or abnormal, thereby contributing to a better analysis of what corrective measures can be employed.

Maps of gas-oil ratios, on which the ratios of individual wells are superimposed on a structure-contour map, can be used to determine the general relationship of gas accumulation and any abnormal increase in the ratio of an individual well under consideration for abandonment.

Caution is recommended in the use of maps for recovery per acre or recovery per acre-foot, for they may reflect erroneous conceptions. All wells do not begin production at the same time, therefore recovery figures on leases developed earlier in the life of a field will reflect not solely the ability of the wells to produce but also the date they were completed. Similarly, if a field has been operating under restricted production, allowables of varying magnitude reflect themselves in recovery totals.

Maps that illustrate the location of different types of equipment installations or grouping of lease labor may reflect causes of either low production or high operating costs, or both. Although this information is available on records, its real signifiance is sometimes not discernible until it is observed in relation to adjacent operations through the use of maps like the one illustrated in Figure 9.

Well Repair

After analyzing all data available, it is necessary to ascertain whether any repair to the well or wells can effect sufficient increase in production to continue operation.

Correction of Gas-Oil Ratios. Correction of gas-oil ratio is becoming more succesfully applied with increased knowledge of reservoir characteristics resulting from periodic surveys.

Reduction of Water Production. The commonest repair work attempted in oil wells is plugging off water. The two sources of water intrusion are from the producing horizon itself and from casing leaks. Ordinarily casing leaks can be repaired successfully but complete shutoff of formation water is problematical and is contingent on many factors over which the operator often does not have control.

Acidizing. The reacidizing of old wells in limestone reservoirs is regularly discussed but data for even general conclusions are lacking. The purpose of any method of well repair, including reacidization, is to obtain an additional quantity of oil, the value of which promises to be greater than the monies expended to obtain it; but an immediate increase does not necessarily reflect a cumulative increase. Consider for the moment Figure 10, which represents a normally declining well production. Such a well is acidized at time X and thereafter produces the quantities as indicated by the solid line. Then, if Area 1 is greater than Area 2, the venture has been a profitable one, but if the reverse is true, the only advantage was an equivalent production of oil in a shorter period of time. If, however, the production follows the normal trend after time Y, as represented by the dotted line, there has resulted both a quicker return and an increase in ultimate recovery.

Efficiency of Lifting Equipment. The operational efficiency of any well artificially produced is dependent upon all mechanical equipment from the prime mover to the bottom of the hole. A study of efficiency should determine whether or not the type of equipment is best suited to the particular field conditions, and then whether the size of the equipment is sufficient to meet the demands.

Removal of Contaminating Materials. In addition to salt water, the three materials encountered most often with the production of oil are paraffin, salt and sand; the continued production of any one will impair efficiency and, therefore, materially increase the cost of operation.

Alternate Operating Procedures

Production from Other Horizons. Pursuit of a primary development program sometimes leads to the penetration of horizons that are possibly less productive than the main objective, but that constitute valuable assets when they can be considered as "behind-casing" reserves. Although many such formations might prove non-commercial if separate wells were needed for their development, it is quite possible to recomplete at a minimum cost old wells that are about to be abandoned. Gun perforating can be employed in this type of recompletion. Providing there is not too great a pressure differential between two or more formations, multiple completions are possible and generally are successful in increasing production. There is also the possibility of retaining the physical well, even after abandonment, for the purpose of deepening to lower productive horizons.

Secondary Recovery Possibilities. Before the abandonment of any well, lease, or properties, it is of paramount importance that detailed consideration be given to the possibility of secondary recovery operations. The physical history of the

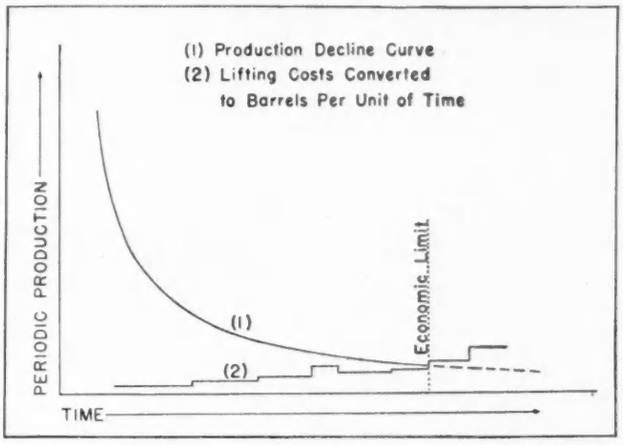


Figure 12. Production and cost of production.

operations ordinarily is sufficient background for determining the practicability of secondary recovery, but core analysis made available by the drilling of test wells furnishes the most positive data for any such conclusions.

Possibilities of Water Disposal. There always exists the possibility that a well can be used for the disposal of salt water from near-by oil wells, either by injection of water into the original productive horizon or by the deepening or plugging back to new horizons.

Vacuum. Vacuum applied to the casing head in the later life of a well has been employed and has been successful in increasing both the current rate of production and the ultimate recovery.

Miscellaneous

It is desirable to consider, either experimentally or from past operating experience, the effect of the abandonment of any well on the production of oil, gas, and water from an adjacent well or wells. Depending upon the location of the abandoned well and the physical characteristics of the reservoir and the fluids contained therein, experience has shown that abandonments can cause several changes in offset wells: an increase in oil production, an increase in fluid production, or an increase in water percentage with fluid production remaining constant. Because abandonments may have an effect upon adjacent properties, it is reiterated that the answer to this problem can best be determined experimentally.

Analysis of Operating Costs

Contributing Factors. The two fundamental contributing factors to the total lifting expense of any well or lease are (1) labor, (2) maintenance and repair. Cost of labor, a subject large enough to be considered by itself, will not be discussed here. However, if any study shows that the cost of labor can be reduced by more efficient distribution, such change should be made.

Factors contributing to the expense of maintenance and repair are manifold, and unless some means of analysis is instituted the reasons for such expense may be entirely obscured. Report forms are suggested with provision for recording the materials and expenditures necessary as well as the reasons for repair and future preventative measures. Sensible use of such information can materially reduce lifting expense.

The production of large quantities of water may contribute so greatly to the cost of operation as to overshadow other costs. By way of illustration, attention is directed to an analysis of the yearly operating costs of approximately 600 wells in the East Texas field, which showed the following costs per net barrel of oil produced:

Pumping water wells	$0.376
Pumping oil wells	0.069
Flowing oil wells	0.080

The number of producing wells on a lease is likewise a factor contributing to the cost of operation. On a lease with a large number of wells that can be served by a single tank battery and perhaps a central power, the result of such centralization is that a maximum amount of work can be accomplished with a minimum amount of labor and repairs. Conversely, where a smaller number of wells is served by one battery, the cost per well and per barrel of oil is relatively higher. On Figure 11 is plotted the lifting cost per barrel of oil versus the number of producing wells on a lease. Seven leases are represented in this analysis, varying from 3 to 39 wells per lease.

Methods of Reduction. The majority of factors that contribute to unnecessary expense of operation have been tabulated under the heading of physical considerations. Improvements in operation leading to savings in either labor or maintenance and repair, or both, will automatically effect a reduction in operating costs.

Effect of Well Abandonment. If the abandonment of a well causes loss of production to a lease, and if no adjustment is made in man-hours to compensate therefore, the resultant cost per barrel for the remaining wells on this lease will increase, thereby shortening the economic life of the remaining wells. It is recommended that any economic analysis made preparatory to abandonment consider not only the offending well but also all wells included in a single cost accounting.

Economic Limit of Production and Economic Reserves

Figure 12 records graphically the production-decline Curve 1, and the lifting costs converted to barrels per unit of time, Curve 2. This type of record is suggested so that there may be available a direct visual comparison of volume of production to cost of production. The formula for calculating the lifting costs converted to barrels per unit of time, or the minimum gross production Q necessary to compensate for lifting costs for any well, is as follows:

$$Q = \frac{L}{(P - T)(W)(N)}$$

where L = lease lifting cost per unit time,
P = posted price,
T = taxes,
W = working interest (expressed as percentage of gross production),
N = number of wells on the lease.

This method assumes that each well on the lease contributes equally to the cost of operation: if that is not true, appropriate adjustments should be made. The use of such graphical representation has been found valuable in determining the economic limit of production at the intersection of Curves 1 and 2 as well as determining the total remaining economic recovery represented by the area underlying Curve 1 to the time of the economic limit.

Only the expenditures of money that would terminate at the time of abandonment of a property are fundamental; charges for overhead, depreciation and depletion should not be considered in determining the economic limit of production and the abandonment of a well. Because of vast differences in financial structure and operation of large versus small companies, the definition of charges directly attributable to lifting expense will vary with the particular organization.

Price of Crude

Unless there are available rather complete and reliable economic analyses that predict future trends in the price of crude oil, the general procedure for the future operation of a property is to consider that there will be no change in the price of crude.

Salvage Values

There are two classifications of salvage values; economic and physical. The former is the net dollars and cents value of the recoverable physical equipment resulting from sale in a second-hand market, and this value is used in obtaining the total net worth of the property. The latter is the value to the operator in transferring the salvageable equipment to another property. Sometimes such a transfer may save new capital investment and lead to a value actually higher than ordinary salvage.

Acknowledgments

The author gratefully acknowledges the constructive criticisms of Dr. R. E. Sherrill, Department of Oil and Gas Production, University of Pittsburgh, and of J. D. Wheeler, Chief Petroleum Engineer, The Ohio Oil Company. He also desires to thank The Ohio Oil Company for the use of records that greatly contributed to the information in this paper.

REFERENCES

[1] W. W. Cutler, Jr.: Estimation of Underground Oil Reserves by Oil-Well Production Curves, U.S. Bureau of Mines, Bulletin 228 (1924), Chap. 11, pp. 15-35.

[2] Secondary Recovery of Oil in the United States, Chap. XXI, 242, New York, 1942, API.

[3] Report of Investigations on a Pressure Maintenance Program for the Reed City Oil Field. States of Michigan, Department of Conservation (1943).

(This paper was condensed from a thesis submitted to the Graduate School of the University of Pittsburg and presented before the American Institute of Mining and Metallurgical Engineers, East Texas Section.)

Shell's Floating Against Mighty

Shell Oil Company's floating docks consist of three floats separated by spreader booms. Heavy steel cable holds the docks in position, aided by five spuds located on deck.

By GORDON B. NICHOLSON, Staff Writer

IN ANSWER to the ageless challenge by the mighty Mississippi River to man's resourcefulness, Shell Oil Company designed and constructed floating docks for use at oil terminals to minimize flood damage and insure uninterrupted movement of oil from field to refinery.

By fluctuating with the capricious surface of the often angry waters, and by frequent manipulation to alter position, the docks are shielded from the river flow and drifting debris moving downstream, and at the same time offer no obstruction to navigation. Docks of this description are now being used in the Whitecastle District at Shell's two oil loading terminals near San Gabriel and La Pice, La., and, equipped to transfer oil from storage tanks to barge, constitute vital links in disposition of the oil produced.

Combining sturdy construction with an inherent fresh-water buoyancy, the docks solve the operational problems presented by proximity with Old Man River. Contributing to the successful operation of the docks are the provisions to facilitate lateral movement in a direction perpendicular to the river banks. By careful observation of river conditions, location of the docks is changed frequently to provide water sufficiently deep to meet the minimum depth requirements for barges being serviced. At the same time, location near the river banks removes the structures from navigable lanes and areas of maximum turbulence.

Essential to a comprehensive understanding of the utility of floating docks is a background description of conditions facing marine loading on this section of the Mississippi River, and a mention of previous experience in erection of oil terminals.

Restless River

Through the voluminous channel of the Mississippi races an enormous volume of water which represents the drain from the vast watershed cradled in the hundreds of miles intervening between the Rockies and the Appalachian Mountains. Driftwood, logs, uprooted timber, bridges, and even houses are carried swiftly down its course towards the Gulf of Mexico, and as if to shorten this tedious journey, the river constantly cuts deep into its own banks, digging out huge segments, formerly breaking through its confines to find shorter channels toward the open waters of the Gulf. Until recently, the river has been allowed free reign over its destiny, and has repeatedly flooded wide areas and often changed its course, with widespread devastation.

Modern engineering now attempts to control the vast body of water, with the construction of levees and numerous spillways controlled by locks which serve the dual purpose of diverting portions of the flooding Mississippi waters into alternate outlets and also retaining sufficient water in the main channel by regulation of attempted diversions of flow.

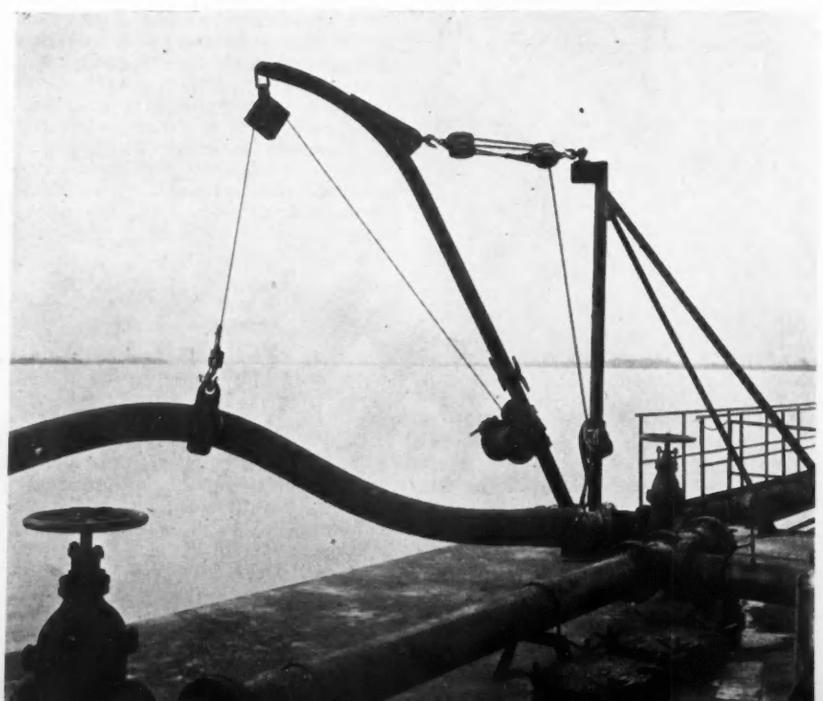
Despite control measures, the Mississippi River in the sections below Baton Rouge measures depths of 165 feet during its mean low level, and annually is subjected to extremes which sometimes cause 40-foot variations and corresponding changes in width, with constant cutting into the banks by repetitious attempts to overflow.

In the past, Shell's docks in the Mississippi were mounted on piling. A determining consideration in the choice of location of these "fixed" docks was their position during low water periods, which must furnish the required minimum of ten feet for operating the oil barges. Design had to consider conditions anticipated during flood stages when 40-foot rises were encountered. The most durable construction materials practical were used to withstand flood conditions, and massive structures were built above high water level on piling 90 feet long, with dolphins, or piling clusters, erected for mooring oil barges.

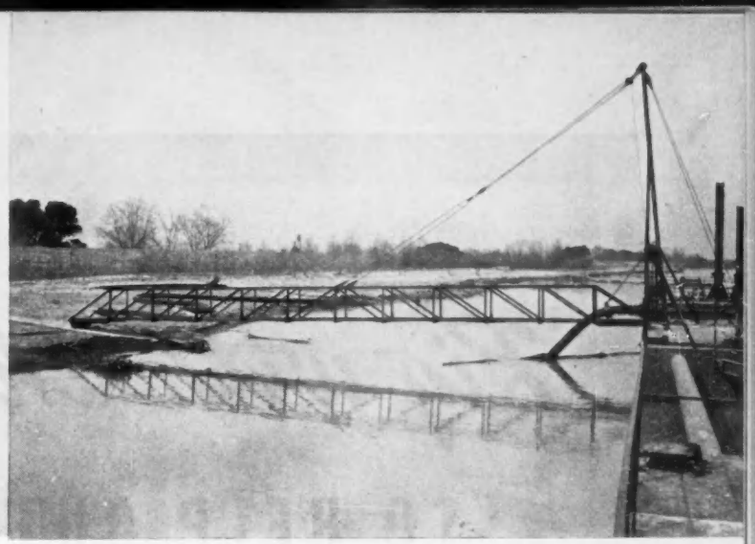
Operating Difficulties

Numerous operating difficulties arose. During flood stages, with the consequent widening of the river, docks were perched precariously far from the banks in the swirling, rampaging waters filled with many types of drift materials which accumulated on the upstream sides of the structures and against the dolphins, creating a strain which sometimes caused the pilings to lean or break. Often the docks were rammed by vessels out of control or off-course in the widened channel. River bottom contours changed rapidly around the bases of the pilings, and during receding waters, often large sections from the banks behind the docks caved in, shearing the pilings of the docks and dolphins.

Both the La Pice and San Gabriel floating docks have hose handling booms and winches for manipulating hoses when loading barges.



Docks Stand Firm Mississippi River



A 36-foot steel walk extends from the dock to the river bank at La Pice.

Shell's docks minimize flood damage and insure safe movement of oil to refinery

Destruction of the docks removed the only outlets for oil, and with storage tanks at the terminals filled to capacity, production ceased until other outlets could be installed. It was due to this situation that Shell engineers designed floating docks to compensate for the vicissitudes and power of the Mississippi, and the first dock constructed was placed in operation in the river at Shell's San Gabriel terminal, located about 20 miles below Baton Rouge. After the first dock had completed several months of successful performance, the second floating structure was installed at the La Pice terminal, approximately ten miles below Donaldsonville. The docks are fundamentally identical in construction and design, although the newer dock employs several improvements to better its overall performance.

The docks are made of three individual floating hulls of all-steel, all-welded construction and separated by spreader booms and buffer beams which give the length desired and provide flexibility and protection. Firmly anchored in position by five spuds and by cables fastened to suitable devices on the river bank, the docks are also equipped with winches on deck which permit pulling shoreward or toward the center of the river.

Facilities are included on each dock for loading two barges simultaneously. Two flexible hose connections are located on the center float of the San Gabriel dock, with dual loading accomplished by butting the ends of the receiving barges. The La Pice dock has flexible hose connections on the center and the downstream floats for loading two barges in normal tow position. In each case, the upstream float serves principally as a stabilizing element for mooring the oil barges.

Overall length of the assembled docks is 177 feet, including the component parts of three 35-foot floats with 36-foot separations by spreader booms, and sides of the hulls measure five feet in height. Steel walkways with hand rails and safety grilled flooring provide access across the spaces between floats.

The five spuds are 30 feet long, two being located on each end float and one on the center float. Spuds are made of heavy I-beams which drop through slots in the deck to contact the river bottom. Size of the slots is ample to permit passage with minimum friction, and allows the barge to move vertically with changes in river level. A steel plate near the base of each spud is used as base for an hydraulic jack for loosening the spud from the river bottom, and a centrally located hand winch on the center float furnishes means of raising. Steel "dogs" are used to lock the spuds in raised position at any height when moving, and a protrusion on the top of each spud serves as a safety catch to prevent loss if dropped into deep water.

Center float of the San Gabriel dock has two oil outlets, and floodlights permit night loading.

Mooring Cables

The docks are moored at both the forward and aft floats by 1¼-inch steel cables extending to the river bank and attached to deadmen. The line on the upstream end has a fixed length of 415 feet, while the length of the downstream line is altered with the changes in river level and movement of the barges, reaching a maximum serviceable length of 430 feet during low water periods.

Four hand winches are located on the end floats and are equipped with ¾-inch steel cables for moving the docks laterally. One winch on each end is set at an angle to conform with the position of deadmen on the river bank, while the second winch on each end faces anchors set on the river bottom and located toward the center of the river.

For lateral movement the free ends of the ¾-inch cables are fastened to deadmen and to anchors in the river, located in a position to give tension in the desired direction. The ends of the cables on two winches are attached for convenience to the same deadmen used by the large mooring cables, and reeling the line pulls the docks shoreward. The winches turned toward the river carry cable which is tied to anchors made of large blocks of concrete dropped out into the river at a point where its depth is 60 feet below the mean level of the Gulf of Mexico. By manipulating these winches, the docks are moved outward from the river bank. When the docks reach the desired location, the five spuds are dropped and the mooring cable on the downstream end is adjusted

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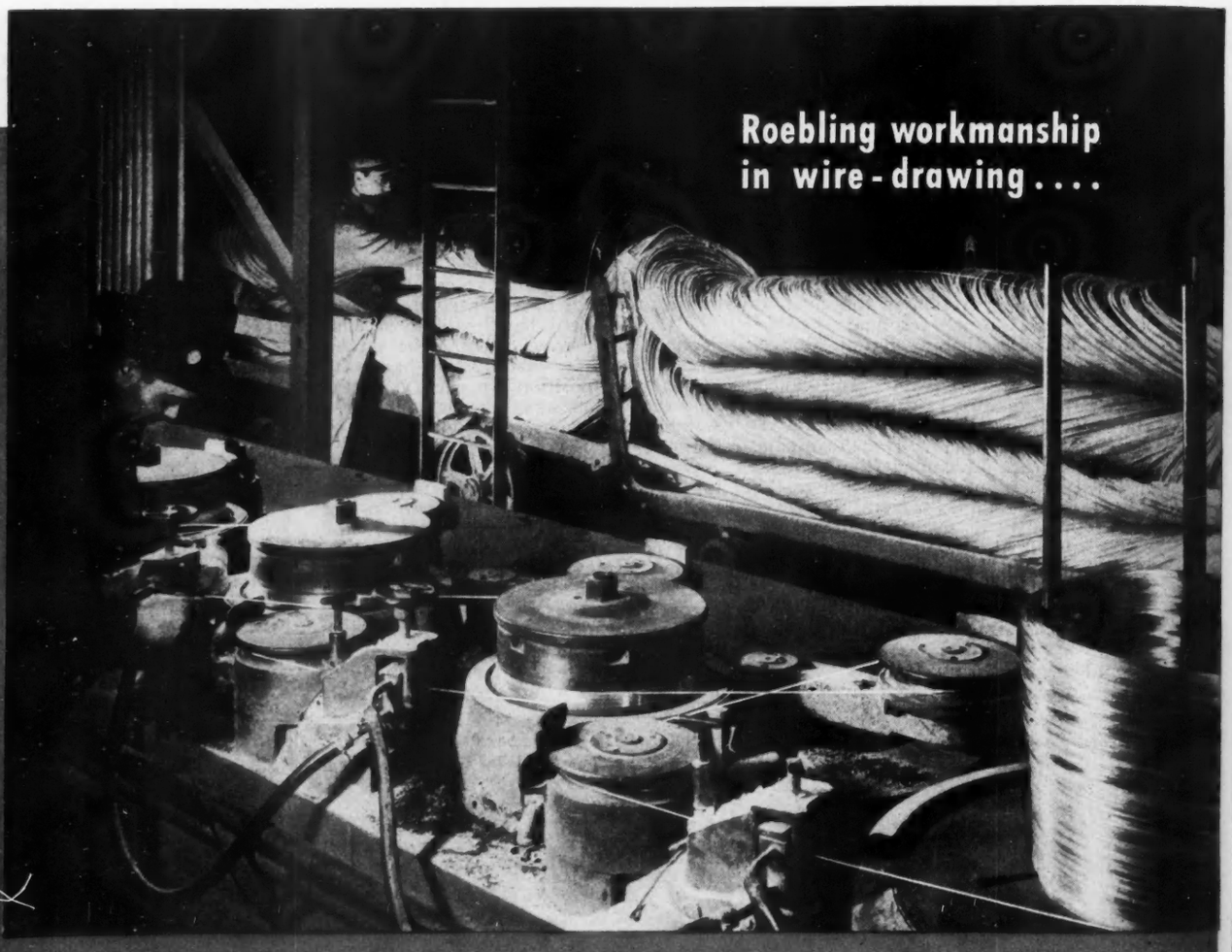

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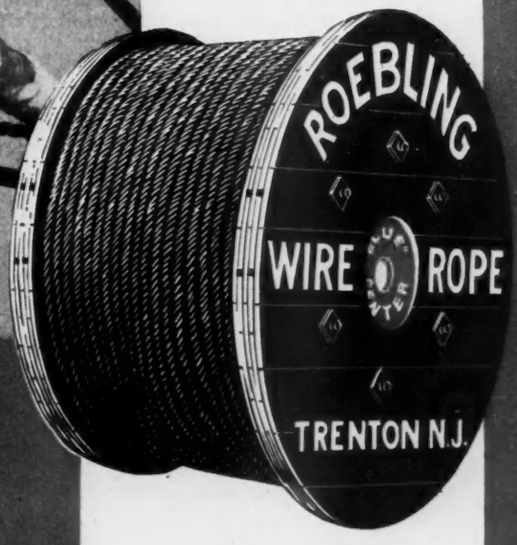

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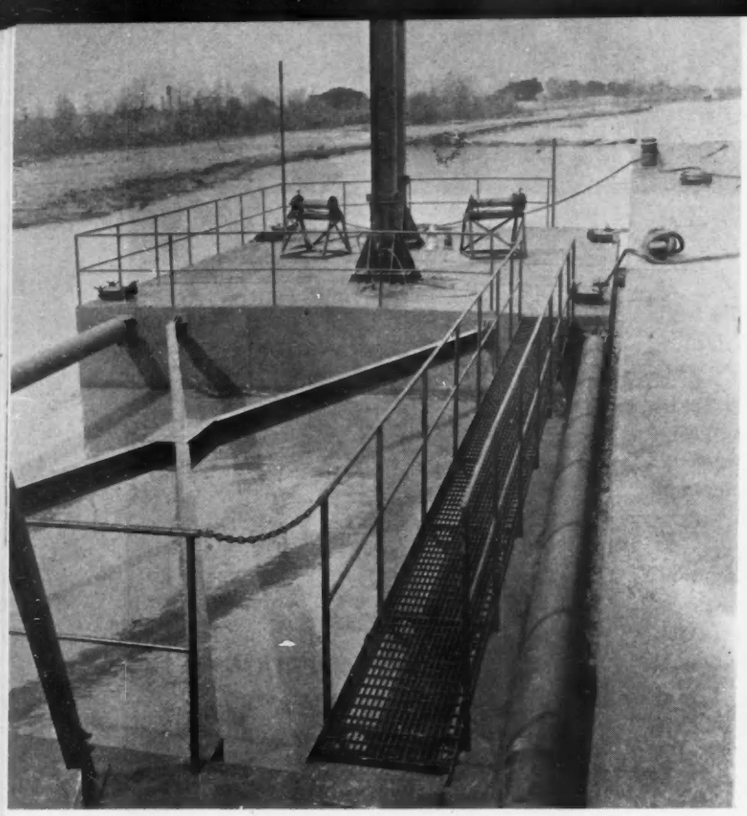
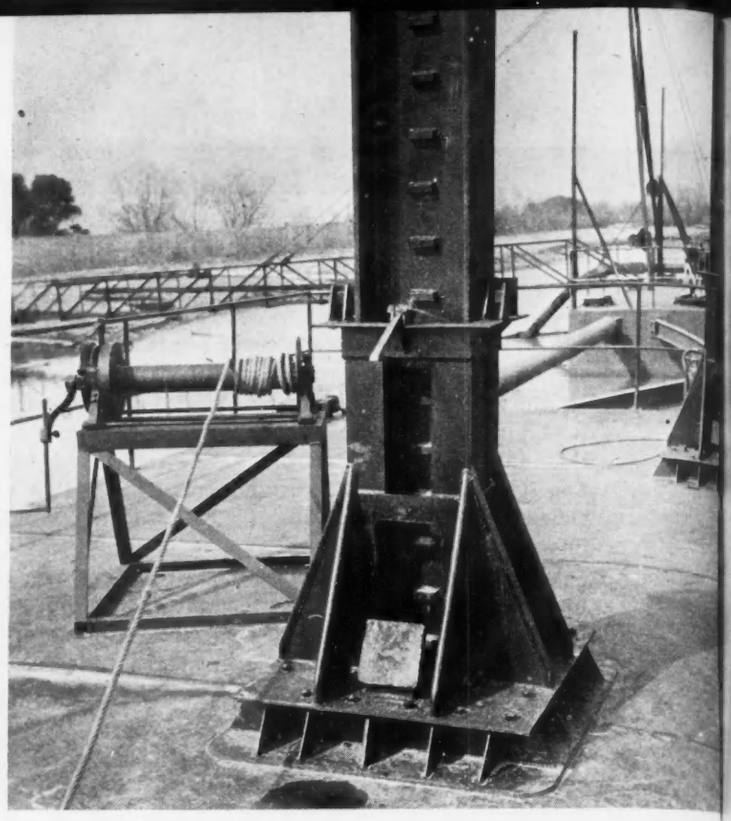


Individual floats are separated by spreader booms and buffers which give the length desired and furnish protection against damage. Steel catwalks extend between floats. Oil barges tie close to the dock when loading.



Spuds made of heavy I-beams are dropped through the deck to hold docks in place, and are loosened by hydraulic jack and raised by winch when moving. Four winches equipped with ¾-inch cable are provided to move docks laterally as river level changes.

for tension. If desirable, tension on the reeling cable is then released.

Other apparatus on the docks include an adjustable walkway which extends to the bank. The walkway is made of steel, with hand rails and grilled flooring, and on the La Pice dock is 36 feet long. A mast on the deck of the center float is equipped with a cable fastened to the end of the walkway, with the other end attached to a winch on the float to allow raising the walk when moving the docks. Hose handling booms and winches are located near the two oil outlets on each dock to facilitate moving the flexible hoses preparatory to loading barges.

Floodlights illuminate loading areas of the San Gabriel docks as an aid in servicing oil barges at night, and this convenience is now being added to the docks at La Pice.

The principal modifications employed in the design of the second dock which differ from the original plan include the change in facilities for loading oil barges from two of the three floats instead of only one, and structural alteration of the bumper beams. The loading devices have already been described, with the later model dock at La Pice having a hose attachment on the center and the aft floats, while the original design concentrated connections on the center float.

Bumper beam used in the La Pice dock are of more rugged construction than the beams at San Gabriel, being made of 12-inch pipe to withstand concussion. The original dock employs I-beams which, although heavy, bent under the impact of colliding barges and sagged with the weight of the barge bumpers and other strains to which they were subjected. Bumpers of both types allow a flexibility between the floats, essential for relieving stresses resulting from contact with bulky, unwieldly river craft.

Storage Tanks

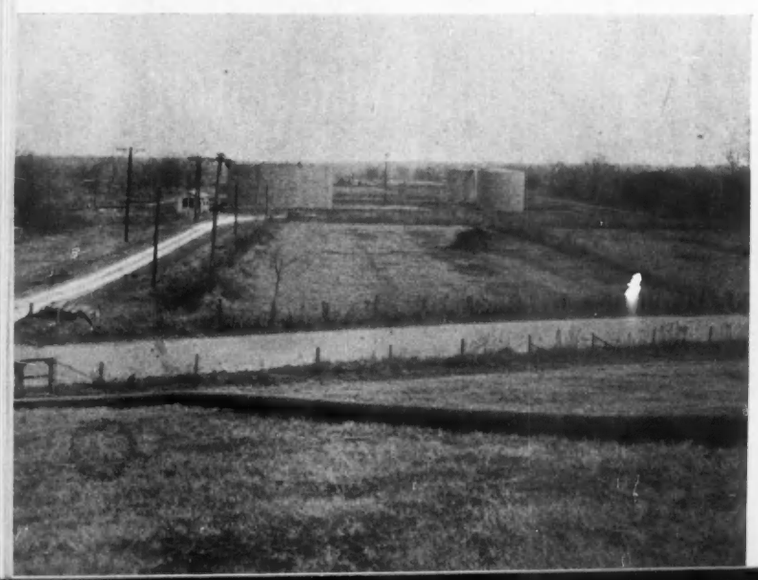
Storage tanks are located behind the Mississippi River levees near each of the terminals, capacity at San Gabriel being 43,000 barrels, which includes separate tanks for storing the two types crude found in the field, while tanks at La Pice have a capacity of 16,000 barrels. An eight-inch line extends from the La Pice tanks to the loading docks, with movement of the crude boosted by a pump driven by a gasoline engine which moves 2000 barrels of fluid hourly through the line at a pressure of 38 to 40 pounds, which lifts the fluid across the levee.

The San Gabriel dock handles larger volumes of fluid by virtue of its 12½-inch line with capacity of loading 4000 barrels per hour, the crude being boosted over the levee and through the hoses by a 50-horsepower electrical pump with about 60 pounds of pressure on the line. Oil of both types produced at San Gabriel is moved through the single line, with ample precautionary measures taken to prevent contamination.

Joining the line pipe after it completes the levee crossings at both terminals, flexible hose conducts the oil to the barges. To adequately serve the floating docks, an unusually long flexible section is required to compensate for the frequently changing position of the docks, to reach the barges which are moored at variable distances from the levees. Multiple sections of hose furnish sufficient length to reach far into the river and down to the barge level when the river is at its lowest stages.

To prevent loss or damage to the surplus hose, an on-shore installation including an elevated platform equipped with a winch provides necessary accessory for each dock. The winch is designed to pull excess hose from the rising water to the security of dry land. Elevation of the winches is determined by expected maximum river level, which is approximately 35 feet in the San Gabriel and La Pice vicinities, with the tower being sufficiently high above the water to insure continuance of operations.

To date, Shell's floating docks have withstood every contingency demanded by the river by the employment of "yielding" tactics for protection against its force. By incorporating a planned withdrawal from areas of maximum turbulence with rugged construction and sound engineering principles, the docks appear capable of coping with the severest buffets of the Mississippi.



Storage facilities at San Gabriel total 43,000 barrels. Crude is boosted over the levee at the rate of 4000 barrels hourly through a 12½-inch line.

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■ CONTINUED FROM PAGE 32

Valley and one from Los Angeles Basin Harbor area, which indicate improvement of initial production characteristics of the wells. Data are prepared in graph form, plotting productivity indices vs productive sand-millidarcy feet, to show that this indicated improvement was not confined to one field or one set of conditions. Types of sands vary from low permeable formations containing hydrated material, through high permeable clean sands and high permeable silty sands. In every field for which data were available, it is evident that an indicated initial improvement is made in the ability of the oil zones to yield more fluid per pound pressure draw-down.

The use of oil base mud appears to improve the initial ability of a well to produce oil. Inadequate history indicates that the improved position of the well's productivity index is maintained. While well completion practices are improved, and swabbing, washing and scratching seldom are necessary, the effect of the use of oil base mud on drilling operations tends, in general, to increase rig time. Precautions are necessary to prevent fires, water contamination and unnecessary fluid losses. In addition, cement work on blank sections and squeeze work on gun perforations is not as easy as with water base mud.

Expenses of completion are usually increased from $3 per foot on shallow holes to possibly $30 per foot on deep holes where necessary secondary shutoffs are made. Improvements in technique and handling should reduce these costs in the future. The operator first using oil base mud is apt to experience excessive costs until his men are properly educated as to technique of handling and saving of the more costly mud.

Waste Water Injection in the Stevens Zone —Greeley Field

By J. T. CROOKER and F. H. SCHNOOR, Standard Oil Company of California, Taft

Waste water injection in the Stevens sand of the Greeley field was begun in 1943 following unsuccessful attempts to dispose of the large volumes of salt water in evaporation ponds. Rapid encroachment of an active water drive around the edges of the producing limits previously had required the construction of several quite large evaporation ponds built at considerable expense in order to prevent damage to the highly cultivated agricultural land in and surrounding the field. Initial injection tests, using a portable power pump, indicated that surface pressures of from 2000 to 3000 psi would be required to maintain an injection rate of from 1000 to 2500 barrels per day. To maintain this volume of injection, two duplex, double-acting steam pumps were installed, but due to fluid-end failures of these units they were modified by use of shop made pistons which to date have successfully withstood the pressures. Early in 1945 a second well was made into an injection well. In the latter part of 1945 water production exceeded the capacity of the two steam pumps and an additional installation was made, this time using a gas-engine powered triplex pump capable of handling the required pressure and volume.

Since soon after the start of the waste water injection project, nearby wells showed an immediate increase in their production with but little or no change in the water-oil ratio. One offsetting well increased in production from 150 to 220 barrels per day to in excess of 300 barrels per day and water-oil ratio of production in the well actually decreased somewhat. Early in the injection program a water treating plant with a capacity of up to 1000 barrels per day was installed, but its capacity has long since been exceeded, and run-of-the-pond water, with oil skimmed from it, has been injected directly into the two wells with—strangely—no measurable harmful effect. Although some benefit has been derived from slightly increasing the production of nearby wells in the field, the project was designed primarily for a means of disposing of the waste salt water. Results obtained thus far indicate that disposal of waste water by injection compares favorably with other methods, but due to the limited period of injection thus far, the conclusions reached by the paper are only preliminary. Presented with the paper were several curves showing the injection history together with data covering the structural features of the field and a discussion of the equipment used.

Review of Reservoir Performance—North Coles Levee Pressure Maintenance Project

By W. J. TRAVERS, Richfield Oil Corporation, Los Angeles

Discovered in November, 1938, this San Joaquin Valley field was developed rapidly, with little information being available for the first four years on problems of gas expansion or possible

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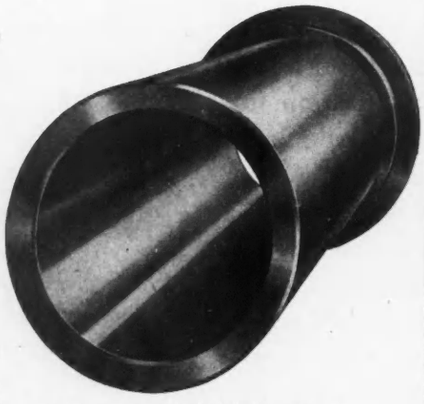

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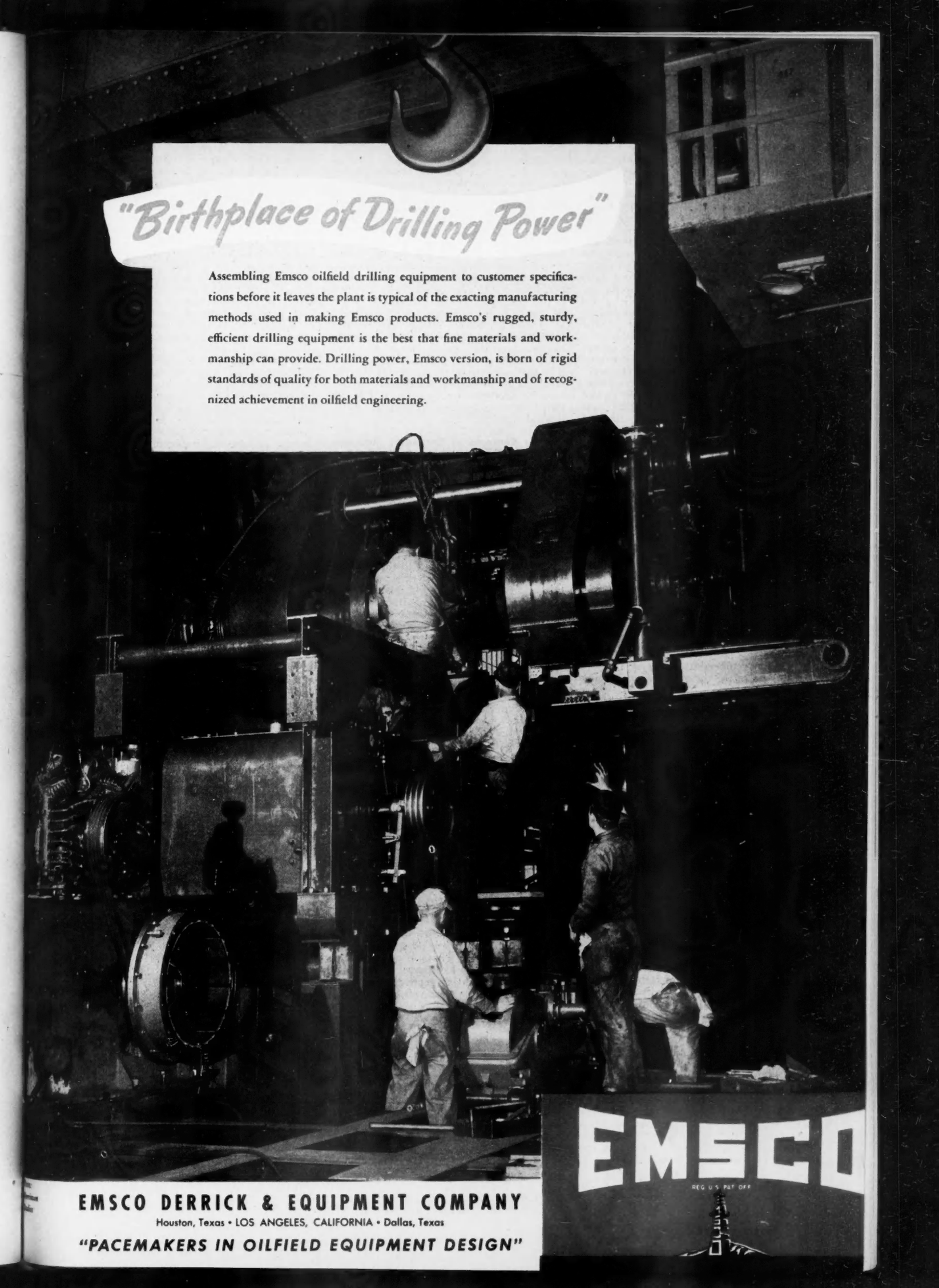
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edge water encroachment. Produced in the conventional manner under a close pattern of pressure control, the field was subjected to an intensive study with a view to selecting the most advantageous method of exploiting the relatively deep (8500 feet), high pressure, and low permeability reservoir. First gas was injected in November, 1942, and by January, 1943, sufficient gas was being injected to maintain pressures, and complete pressure maintenance has been adhered to since that time. Injection rates have varied from 20 to 35 million cubic feet per day at pressures of from 3200 to 3400 psi. Flowing life of the wells has has been prolonged, there still is no discernible evidence of bottom water movement, and the pattern and rate of gas cap expansion has been favorable.

The injection interval is confined to the top 150 feet of the Lower Western Zone. Four wells are used exclusively for gas injection and one is a combination injection and producing well. In the former, gas is injected through 2½-inch tubing and in the latter, gas is injected in the annulus between tubing and a 6⅝-inch protection string, while the well is produced through the 2½-inch tubing. Oil production of the average well varies from 140 to 385 barrels per day. Initial gas-oil ratio was 600 cubic feet per barrel, but gradually reached a peak of 5000 at the end of 1944. Remedial selective cementing operations were performed on the high-ratio wells and production limited to the lower 200 feet of the Lower Western Zone. In the 16 remedial jobs, ratio has been reduced from a high of from 2000 to 3000, down to about the formation ratio of black oil. In the 72 wells now completed in the zone, including the five injection wells, the gas-oil ratio still is below 1800 cubic feet per barrel. It is the plan of the program to maintain this slowly rising trend until the gas has replaced a very large proportion of the oil in the reservoir.

Performance of the Playa del Rey Gas Storage Reservoir

By L. S. KELSEY and E. C. BABSON, Union Oil Company, Dominguez, Calif.

The Playa del Rey field in Los Angeles County was first injected with gas experimentally in the latter part of 1942 with the intention of determining suitability of the partially depleted oil structure as a gas reservoir which could be used for storing surplus gas during summer months and withdrawing gas during the peak-demand winter months. Large scale storage operations began in 1943 with the installation of the necessary compressor plant, and injection was started on five wells located relatively high on the structure. These wells were later augmented by six additional injection wells. Injection rates, with some exceptions, have been maintained at 11,000 to 15,000 MCF per day and withdrawal rates have varied from 12,000 to 48,000 MCF per day, the latter depending upon seasonal and daily demands. Rates of withdrawal often change several times in a day, and in fact continuous withdrawal for a full 24-hour period is relatively uncommon.

When gas production from any pumping well in the project area is found to have increased to a point inconsistent with efficient gas storage operations, the well is either curtailed or shut in altogether. Thus far, of the 17 wells originally producing when the property was taken over by Defense Plant Corporation, one has been shut in as uncommercial and four shut in because of excessive gas production. Based on data obtained from past performance and for accounting purposes, all gas produced from wells in adjoining leases in excess of their normal gas-oil ratios, is considered as excess gas which has migrated from the Playa del Rey storage reservoir, and, by agreement, such excess gas is returned to Southern California Gas Company. Numerous curves and other data accompanying the paper show in graphic form the history and success of the project. While it can be seen that certain difficulties have been encountered during the operation, and that performance is not theoretically correct, it is true that, to date, 2,330,000 MCF of gas have been stored, and withdrawn at high pressure during the winter months, thus furnishing an urgently needed supplementary supply to meet peak demands in the Los Angeles area. The project apparently has been of sufficient value to justify a material expansion of facilities during last fall in an effort to increase the maximum withdrawal rate.

Current Concepts of Secondary Recovery and Their Applications to California Reservoirs

By N. VAN WINGEN, Richfield Oil Corporation, Los Angeles, and NORRIS JOHNSTON, General Petroleum Corporation, Los Angeles

The majority of California operators have not been secondary-recovery minded despite the fact that the state's future as a principal oil producing region is probably closely hinged to the ultimate successful application of this method of operation to existing fields. Factors contributing to this lack of interest have been (a) availability, except during war periods, of primary production greatly in excess of demand, (b) the low average price of California crude, and (c) the general lack of suitability of California type reservoirs to the secondary recovery methods as practiced in the Eastern and Mid-Continent oil fields of the United States.

Divided into four general parts, the paper presented a review of literature pertaining to secondary recovery of oil; suggested experiments which will lead to a more complete understanding of the mechanism of fluid displacement; listed past and current California secondary recovery and gas and oil storage projects; and discussed future secondary recovery possibilities for known California reservoirs. With the exception of Kettleman Hills, none of the secondary recovery projects in California has been extensive nor economically significant. It has been demonstrated, however, that in certain California areas, secondary methods can be applied with some measure of success. On the basis of several important factors, among which are sand thickness, permeability, porosity, oil gravity, value of oil, and drilling costs, it appears that, in general, the probability of a successful large scale secondary recovery project in California may be relatively remote.

A Statistical Approach to Core Analysis Interpretation

By JAN LAW, Consulting Engineer, Los Angeles, and W. F. CERINI, Union Oil Company, Los Angeles

Aggregates of samples removed from either oil or water sands exhibit a wide variation in oil saturation. The variation in oil saturation is sufficiently great that low oil values, in the oil sand portions of a cored section, extend well in to the range of saturation exhibited in the water sand portions. Conversely, high oil values in the water sand portions of a cored section extend well into the range of saturation exhibited in the oil sand portions. This range of values may be considered as resultant from the influence of four sets of conditioning factors: (1) variation in degree of oil saturation as accumulated; (2) variation in intensity of flushing action during coring; (3) variation in retentive power as derived from variations in rock properties; and (4) variation produced by errors, accidental and inherent, in the technique of measurement.

The mechanism by which a total variation may be divided into "accounted for" variation, and residual or "unaccounted for" variation is included within a branch of applied mathematics termed correlation analysis. Correlation analysis employs two analytical tools, namely frequency distributions and coefficients of correlation, both of which can be presented to engineers by reference to concepts of analytical mechanics. Following a comprehensive discussion of the above analytical tools in relation to variations found in core samples of oil sands, and using numerous charts to illustrate the mathematical relations, the authors conclude that the greater dispersion of oil saturation in oil sands as compared to the lesser dispersion of oil saturation in water sands, provides by means of measures of dispersion, an additional criterion for core analysis interpretation.

Casing Landing Practice

By JOHN DE HETRE, Youngstown Sheet and Tube Company, Los Angeles

In view of the lack of improvement that should have accompanied the advancement of casing program design technique, it is suggested that close and individual attention be given to each well in a new field until sufficient information is available to warrant adoption of a standard landing procedure. Many failures that have occurred in landed strings of casing doubtless could be attributed to an overstressed condition that developed after the pipe was landed. Although most operators calculate their casing programs much closer than they did seven or eight years ago, many of them still leave the matter of arriving at a proper landing procedure to the man in the field, who, in many cases, does not know the margin of safety that is available in the casing program. Lending strength to the belief that the landing weight of long strings should be held to a minimum is the reference to API data on bi-axial loading which shows a substantial reduction of the resistance of the casing to burst and collapse when tensile loads are more than half the yield strength of the pipe.

Of considerable importance to effecting a satisfactory landing of the casing is that of determining the depth of the freeze point of the string. Common practices that avoid excessive stressing of the string are discussed, including that of maintaining close watch of the weight indicator when moving casing during the final minutes of completing the cementing job. Charts are presented which aid in the determination of the freeze point. Temperature and pressure changes subsequent to the final setting of the pipe also are considered as having an important bearing on the effectiveness of the landing job. Calculations in connection with landing a string of casing in a typical 10,000-foot well are presented as an example to show the need of engineering of the landing problem.

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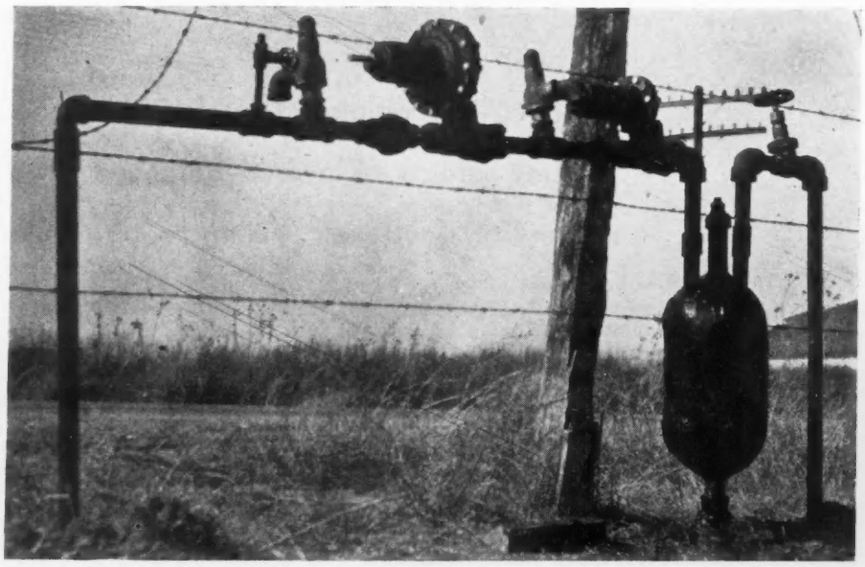
PIPE LINE HINTS

Calcium Chloride Container Serves as Fuel Gas Dehydrator in Station Line

A practical way of dehydrating high pressure natural gas to prevent the pressure reducing regulators from freezing up and causing trouble during cold winter weather is to pass the gas through a tank containing calcium chloride flakes, before it reaches the input side of the side of the pressure reducing regulator.

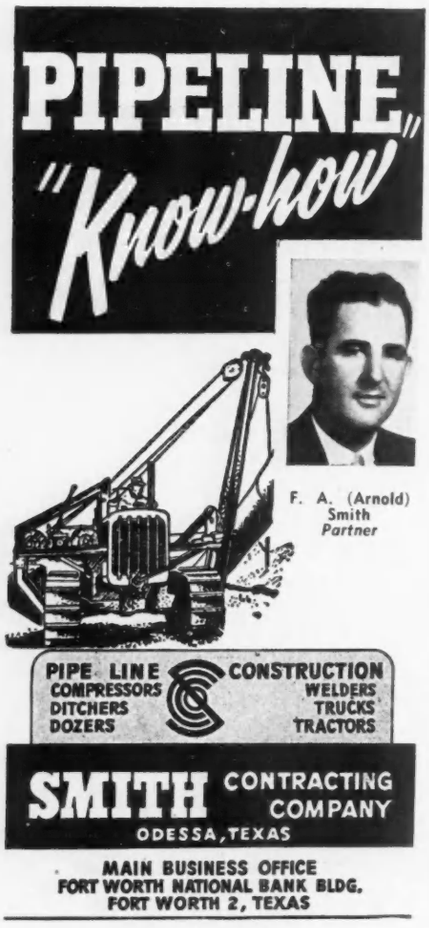
FUEL DRYING

One company makes its own dehydrator units (calcium chloride containers) by taking 2-foot length of 8-inch pipe and closing each end with orange peel welds. In one of the ends three pipe nipples are welded, two of which are 1-inch pipe nipples four inches long. The third or central nipple is 1¼-inch diameter and four inches long. The two lateral 1-inch nipplts serve as inlet and outlet channels for the gas. The 1¼-inch nipple capped with a reducer and plug is used as a channel for filling the dehydrator tank with calcium chloride flakes after the unit has been inserted in the line. The 1¼-inch nipple welded in the opposite end and capped with a reducer and plug is used as a channel for draining out the liquid and sludge that accumulates as the calcium chloride absorbs moisture and water vapor.



For ordinary regulator settings the dehydrator tank is installed in a vertical position with the single drain nipple on the bottom end and the three pipe nipples on the opposite end pointing upward.

It is the usual procedure of the pipe line maintenance crew to fill the dehydrator tank with calcium chloride flakes in the fall of the year about the time of the first heavy frost and to drain out the watery sludge that accumulates in the dehydrator tank the following spring as soon as it becomes reasonably certain that no heavy frost is likely to occur thereafter.



Articulated Supports Extend Support on Coated Pipe

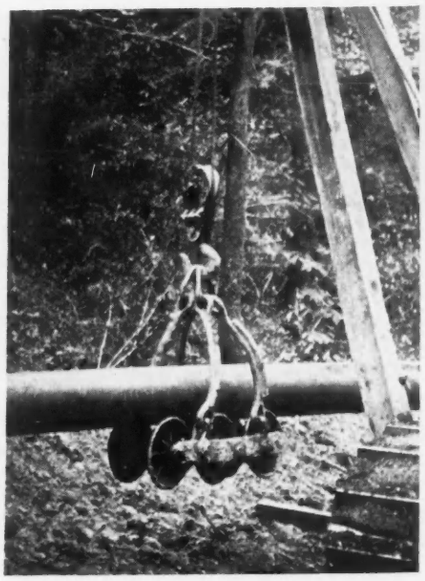
Where a moving support is used to afford necessary ground clearance while coating and wrapping a pipe, care must be taken to insure equal load distribution over all the rollers used, to guard against possible load concentration on one flange and consequent chipping or crushing of the coating.

PIPE CARE

One contractor uses three pair of rollers, so mounted as to give flexibility and insure equal distribution of pipe weight on all six supports. The axles on which the rollers rotate are carried in two pair of side arms, the middle axle serving as junction of the two bars so that either end pair can shift with relation to the center rollers.

The arms which suspend the rollers from the side-boom tractor hook are then attached to the centers of each of the short supporting arms, allowing either end pair of rollers to shift through an arc of several degrees on either side of horizontal alignment. With this flexible support, the rollers adjust themselves automatically to a change in pipe diameter at a weld, following the irregular path on the pipe exactly as individually sprung axles of a locomotive follow rough track.

By connecting the supporting arms through chain links instead of over a common hook, further slight shift in alignment and consequent length of supporting arm is obtained without concentrating load unduly on one roller or pair.



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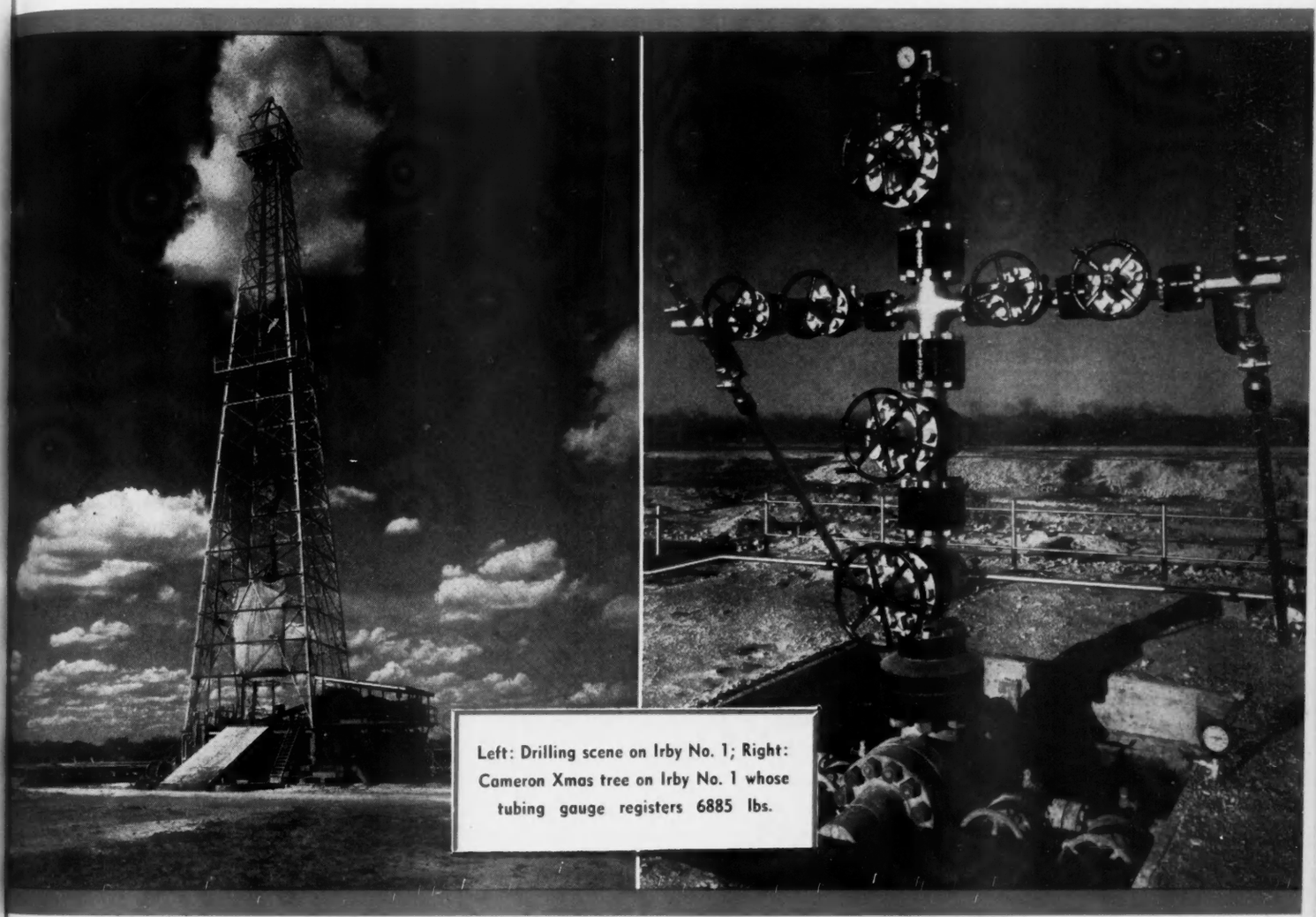
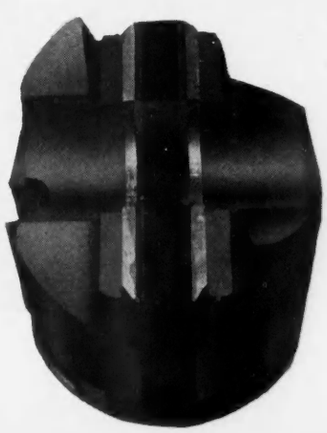


Left: Drilling scene on Irby No. 1; Right: Cameron Xmas tree on Irby No. 1 whose tubing gauge registers 6885 lbs.



CAMERON RAM
View of a Cameron blowout preventer ram with self-feeding Hycar packing element molded by Murray.

The extremely high pressures encountered in drilling and completing Irby No. 1, Goliad County, Texas—world's highest pressure well—provided a severe test for the Cameron pressure control and completion equipment used in the operation. The fact that the Cameron blowout preventers, "Flex-Seal" valves and Christmas tree were equipped with Murray molded rubber parts clearly reflects the ability of Murray engineers and craftsmen to provide the proper rubber component to get the job done satisfactorily.

The Murray rubber plant, which is equipped for both compression and injection molding, and the Murray tool and mold division for the manufacture of customer's molds, is second to none in the nation. These modern facilities, together with the services of a capable engineering staff, are at the disposal of manufacturers.

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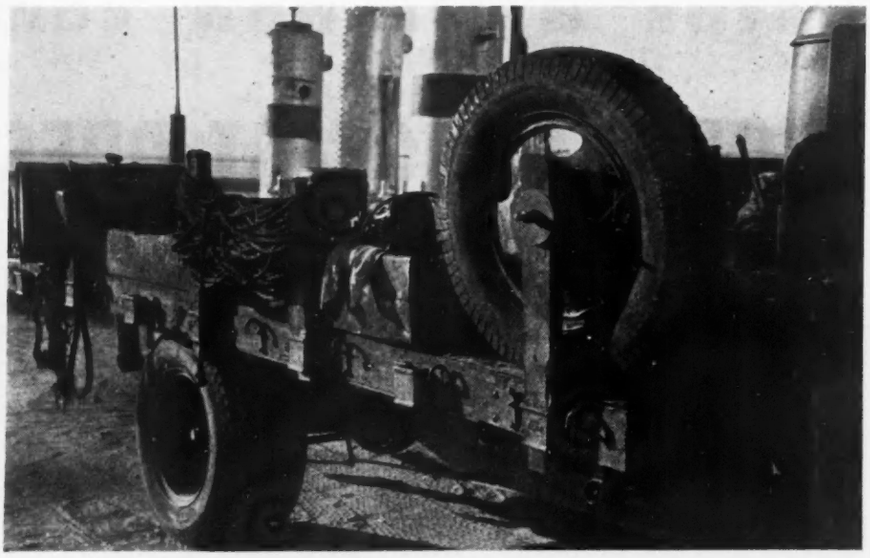


TIRE MOUNT

Although it often is considered a necessary evil, the cumbersome and awkwardly-handled spare tire must be carried with the field truck wherever it is and during whatever type of field job that may be going on. To simplify the task of carrying the spare in such a way that it can be readily extricated from the load if needed, and so mounted that it can be switched to whatever part of the truck bed may be most convenient according to the type or size load being carried, the crew of one company mounted it on a truck bed stake as illustrated. A hole drilled through the stake and a bolt run through to support the tire, are all that is needed for mounting, and the stake may be thrust into any socket along the side of the truck.

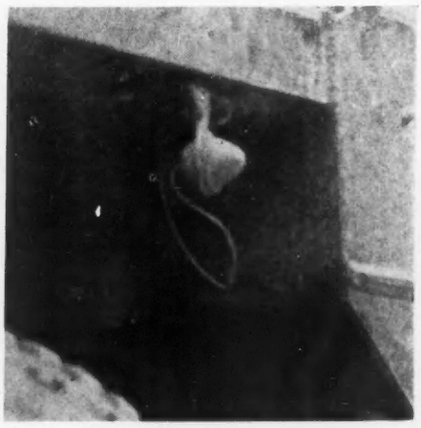
The ability to switch the tire mount to any part of the truck bed, together with the ease of removing it for changing in event of a flat tire, have made this carrying method well worth while in field time saved for both men and equipment.

Adjustable Truck Stakes Simplify Material Handling

TRUCK STAKE

Since oil-field hauling involves a great variety of loads, from heavy machinery to casing and flat materials, it frequently is advantageous to have truck stakes which can be adjusted to the particular load. One operator has devised a disappearing, adjustable stake made of cold-rolled steel which greatly speeds up the loading and unloading of a truck. Run through the hole in the truck bed is a short length of 1½-inch pipe, the lower end being welded or bolted to a convenient member of the body or bed frame. Three bayonet-type slots are cut into the side of the pipe, all branching off of a single narrow slot running vertically the length of the pipe section.

A stake made of a length of cold-rolled round steel having a pin or bolt affixed in its lower end as shown is placed within the pipe section. Depending upon the type load on the truck, this adjustable pin can be raised and set at any one of the three different heights. Each is as firm as any truck stake of the usual variety, and the ability to telescope it completely, thus clearing the truck bed without need for storing numerous loose stakes, is more than worth the additional work involved in constructing the devices.



SIMPLICITY IS THE FIRST REQUISITE OF WELL CONTROL

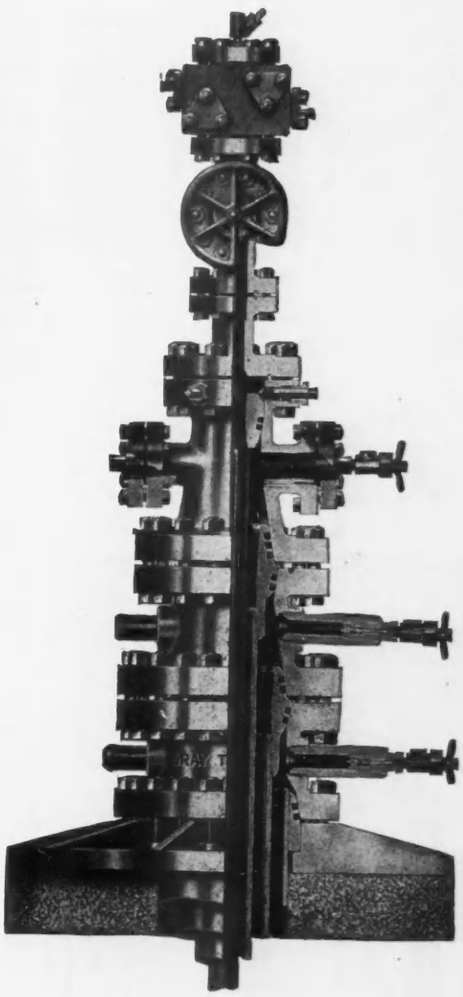
Bridging the gaps with control

A "system of well control" must bridge *all* the gaps—the changing of equipment from that needed in the performance of an individual operation to that needed in performing a succeeding step—otherwise it's only a "method of completion." A "system of well control" must include a plan for control of every step in the sequence of operations PLUS CONTROL while assembling and disassembling equipment during and between all these operations.

A "system of well control," like "methods of completion," provides complete mechanical control during the performance of each of the individual steps, but in addition it plans and provides for essential control while changing equipment between operations. The critical period when control is most needed is during the period of changing equipment, for unless control is provided, the well is wide open, and the operator finds himself in the inconsistent position of having provided control during the less critical periods, and operating without control when most needed.

Gray Systems of Well Control are coordinated methods, providing the highest degree of control and operating efficiency for performing the entire sequence of operations from drilling through producing the well. Drilling may proceed in the usual manner or under pressure. Casing may be landed and sealed with the heads in any one of several methods. Completion can be performed in any desired manner. After completion, any desired operation in and on the well can be performed without killing the well, thereby anticipating future operations and requirements. Gray Systems of Well Control came into being from the clearing house of thought of over 500 methods of completion, an experience and "know-how" gained from over 20 years of work to meet all kinds of conditions. There is no gap in control when you use Gray Systems of Well Control.

The whole is greater than any of its parts. Look for the gaps that aren't there!



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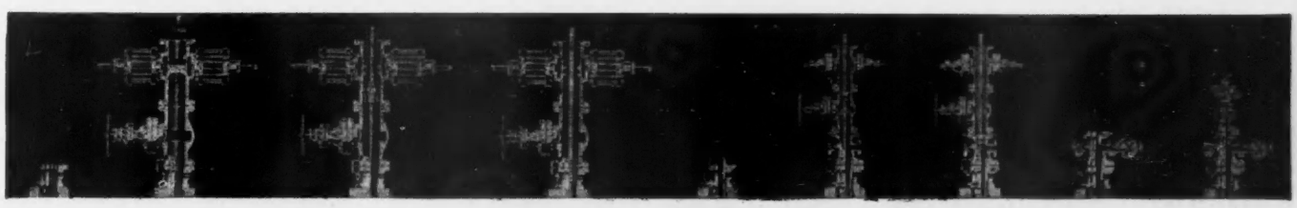


Casing Head Attached | Drilling | Running Casing | Casing Landed | Drilling Control Equipment Removed | Drilling-in and Running Tubing | Tubing Landed | Control Equipment Removed | Manifold Attached

PRODUCTION HINTS

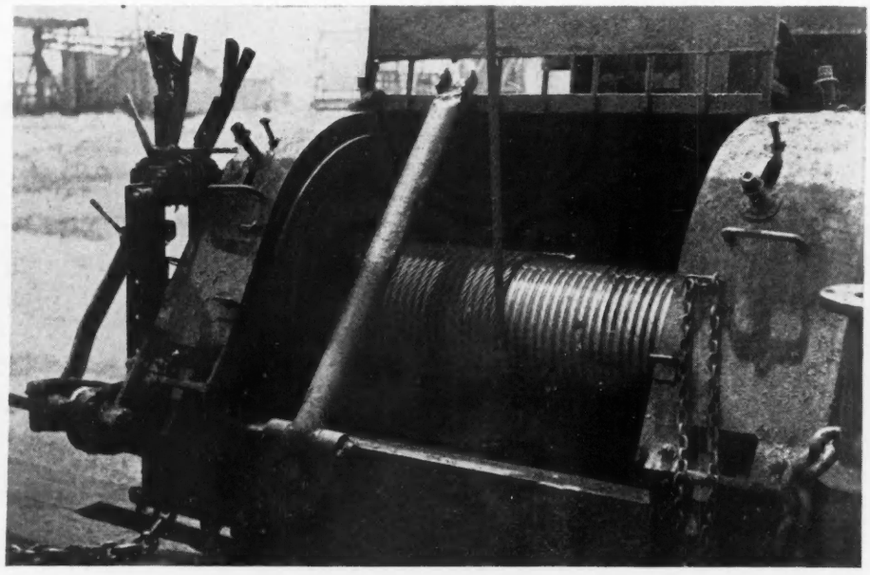
Divided Drum Restricts Winding Area and Safeguards Unused End of Line

In order to confine the hoisting line to a certain portion of the hoist drum area, yet have it possible to utilize the entire spool without excessive labor in the field, one company utilizes a hinged arm which is laid across the open side of the hoist as shown.

WIRE LINE PROTECTION

Made of 3-inch pipe, the arm is easy to move in a vertical plane, but resists any attempt to move it in a horizontal plane. This feature effectively prevents further lateral travel of the line and causes the line to be confined to wrapping in the desired section of the drum. New line thus may be kept unused but in readiness on the one side while full use is made of the other portion of the line.

Wear on the side of the arm where line contacts it before making another wrap is not a serious problem, since a new section of pipe may be placed with very little cost and time.



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Curved Nozzle Removes Bridges in Bailer Operation

One of the problems attendant upon operating a side-door opening suction bailer, particularly if heavy sand or shaley material is being handled, is that of flushing out the interior and breaking down sand bridges up in the barrel. Short work is made of this problem by the production crew of one company through use of a curved pipe nozzle by which a high-pressure stream of water may be shot up inside the bailer. To the end of their wash-down hose was attached a nipple, valve and long curved length of ¾-inch pipe, the latter bent through approximately 90 degrees between the control valve and nozzle end.

BAILER OPERATION

After the bailer has been opened and flow of sand has stopped, this nozzle is inserted into the opening as far as possible and the full head of water is rapidly turned on. Seldom does this action fail to break down the most stubborn of bridges. If the collapsing bridge clogs the opening, the operator holds the nozzle near the opening and flushes out the material. This simple device is saving many man-and machine hours on well-pulling operations.

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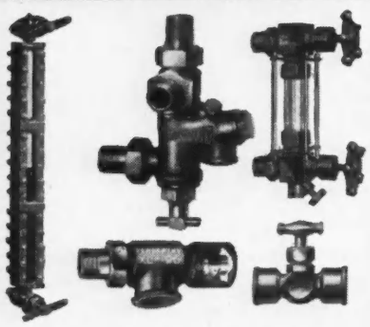

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See Pages 2450 to 2455, Composite Catalog

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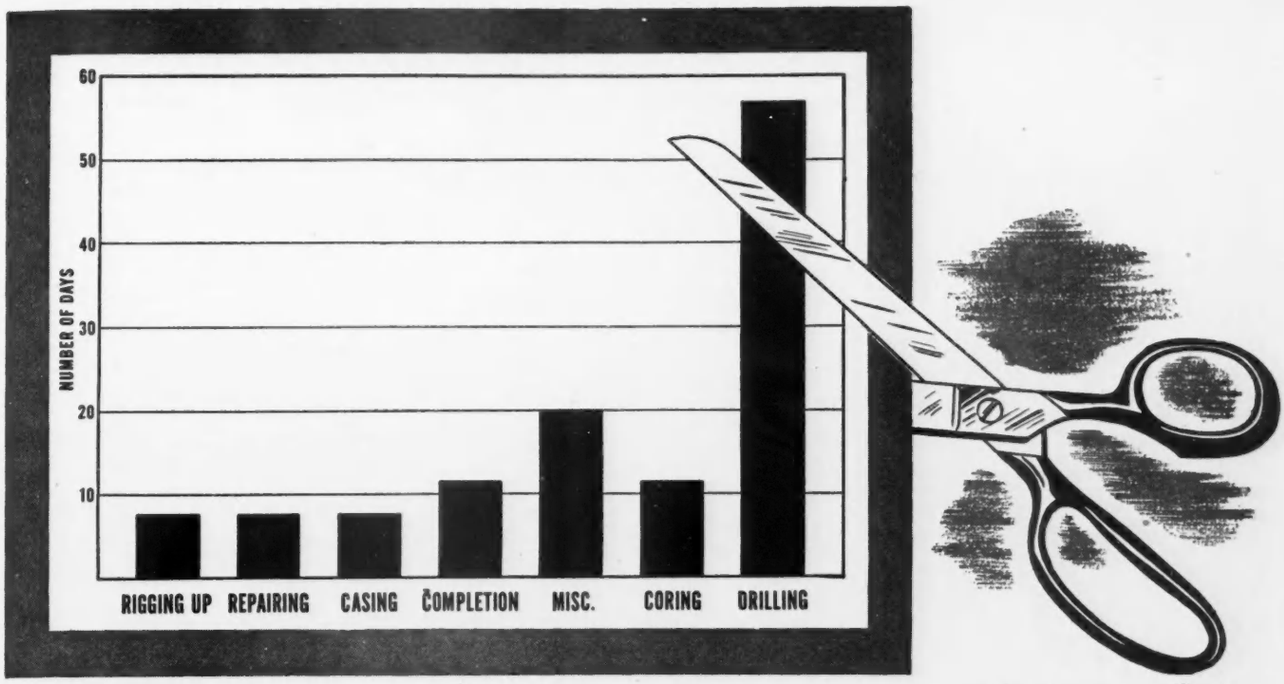

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In a recent study of 70 wells in the Southwest area drilled to an average of 10,000 feet, it was revealed that of the total average well time of 123 days, 57 days or 46.75% of the time was spent in drilling. Obviously, anything that reduces this high percentage of drilling time is an important factor in lowering total costs. Both QUADRAFOS* Sodium Tetraphosphate and AEROFLO* Drilling Mud Conditioning Compound will help save time and trouble under a wide range of drilling conditions.

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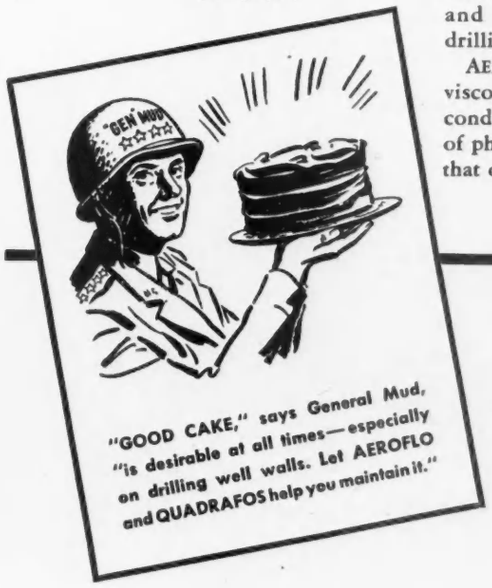
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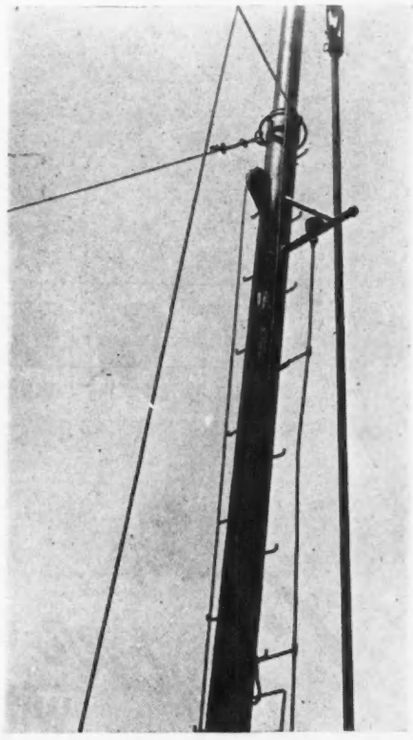
Rack-Operated Bar Locks Expanded Servicing Mast

SERVICING MASTS

A method of positively locking together well-pulling unit telescoping mast sections from ground level is contained in the ingenious device employed by one company. Instead of using a plain piece of bar stock which would have to be forced through and removed at each well by a man climbing to the top of the mast, a rack and pinion principle is employed which permits it to be operated conveniently from the ground. A round steel bar having teeth cut in the side along its length is moved in or out by a rigidly-mounted horizontal pinion gear which in turn is rotated by the long extension handle. The bar is completely housed in a length of pipe welded over the opening in the mast, and the pinion is mounted in another enclosure welded over an opening in the side of the bar housing.

Well braced, the assembly is weatherproof and lubrication is needed only infrequently. The bar is easily removed by removing a pipe cap at the outer end of its housing. The pinion extension handle is a length of sucker rod material held in position by several guides projecting out from the side of the mast.

The slender rod connecting the universal joint just below the pinion and the hand crank is strung up the side of the mast in line with the stakes which are welded on to serve as ladder, and is thus protected somewhat against damage while the unit is being set up and while being transported between locations. The brace above the locking bar protects against possible line fouling.



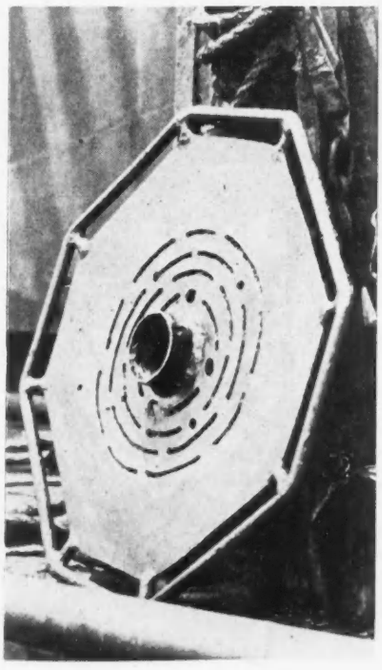
Platform Screws on Stuffing Box to Form Tool Rack

TOOL RACK

To speed up rod-pulling operations, good use may be made of a simple round-table tool bench arrangement similar to that shown. An octagonal piece of sheet steel is fitted at its center with a female fitting which will screw down over the stuffing box bushing atop the tubing string. An encircling railing of ¾-inch pipe is welded to the rim of the table for strength and to protect workmen who may lean up against the edge of the device.

Slightly dish-shaped, the bench has a series of semi-circular slots burned through the material around the center fitting to facilitate draining off oil that may accumulate on the surface. Advantages of this type of tool rest lie primarily in its accessibility to the several men working around the well head, and the fact that no time is wasted by men stepping over to makeshift benches or boxes for hand tools. It materially contributes to reducing the time consumed in rod-pulling operations.

The rack also affords a most effective protection for the stuffing box against possible damage from swinging or dropped elevator.



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MOLY

Crude Runs to Stills Given Cutback; Production Increases Moderately

A considerable cutback in crude runs to stills resulted in a decreased output of all principal refinery products during the week ended April 6. Production of crude oil increased moderately during the week, while considerable withdrawals were made from its stocks. Stocks of gasoline and residual fuel oil were decreased sharply, while distillate fuel continued to accumulate at the rate of over 1 million barrels per week.

Production of crude in the United States, as reported by The American Petroleum Institute, averaged 4,446,000 barrels daily during the week, an increase of 21,000 barrels daily over the previous week, and 338,000 barrels, or 7.1 percent, less than was produced in the comparable week of last year.

Crude runs to refinery stills were made at the rate of 4,523,000 barrels per day, 161,000 barrels daily less than the previous week, and 197,000 daily, or 4.2 percent, under the runs made during the same week of 1945.

Stocks of refinable crude oil were reported by the U. S. Bureau of Mines to be 224,994,000 barrels on March 30. This report shows that 159,000 barrels were withdrawn from crude stocks during the week ended March 30, leaving an inventary that is 1,212,000 barrels more than the 223,782,000 held on March 31, 1945.

The week's output of gasoline, including natural blends, amounted to 13,718,000 barrels, a decrease of 178,000 barrels from the preceding week, and 945,000, or 6.4 percent, under last year's week. Gasoline stocks were reduced 489,000 barrels during the week, and stand at the current figure of 104,226,000, which is 7,615,000 barrels more than was on hand a year ago.

Distillate fuel oil production received a further cut-back of 297,000 barrels for the week, bringing the week's output to 5,060,000 barrels, an increase of 433,000 barrels, or 9.4 percent, over the production of the comparable period a year ago. Distillate fuel stocks were increased by 1,013,000 barrels, and now stand at 29,253,000.

Production of residual fuel oil during the week amounted to 8,401,000 barrels, 337,000 barrels less than was produced the week before, and 737,000 under last year's week. Withdrawals from stocks, amounting to 457,000 barrels, were made during the seven day period, bringing stocks down to 37,289,000 barrels. This total, lowest since World War I times, is 3,527,000 barrels, or 8.6 percent, under the 40,816,000 barrels on hand April 7 last year.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod.		Runs to Stills		Crude Stocks		Gasoline Stocks		Gasoil and Distillate Stocks		Residual Fuel Oil Stocks	
	Barrels Daily	Week Ended	Barrels Daily	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended
Highs:												
1941	4,337	11-22	4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	47,861	11-14	95,857	1- 8
1943	4,436	11-13	4,331	12- 4	245,752	5-29	94,159	3-20	47,187	11-27	72,881	1- 2
1944	4,762	9-30	4,798	12-30	240,992	1- 1	89,162	4- 1	48,162	10-28	64,744	10- 7
1945	[1]4,944	7-14	[1]5,140	8-18	227,554	10-13	99,012	3-24	45,341	11-17	56,074	1- 6
1946	4,726	3- 2	4,779	3- 2	229,430	3- 2	105,233	2-16	35,199	1- 5	42,371	1- 5
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 3
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,382	4-12	90,914	7-13
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-18	232,191	1- 9	68,182	10-16	30,732	4- 3	57,596	12-25
1944	4,357	1- 1	4,228	2-12	220,258	9- 9	76,302	1- 1	30,232	4-19	49,737	3-18
1945	3,621	10- 6	3,409	10- 6	[4]211,813	8-25	70,791	10-13	26,483	3-17	38,548	5-26
1946	4,403	3- 9	4,498	1-12	218,193	1- 5	98,494	1- 5	25,131	3- 9	37,289	4- 6

TRENDS OF 1945 AND 1946

Trends in Week Ended	Crude Oil			Gasoline		Gasoil and Distillate		Residual Fuel	
	Production Daily	Runs to Stills Daily	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End
1945:									
January 27	4,727	4,756	221,310	14,957	88,223	4,843	33,561	9,252	51,119
February 24	4,777	4,803	219,351	15,500	95,972	4,958	28,753	9,084	46,713
March 31	4,781	4,677	223,782	14,644	98,758	4,548	26,889	9,184	41,745
April 28	4,805	4,780	223,474	14,633	94,068	4,636	28,273	9,379	39,813
May 26	4,887	4,950	222,831	15,194	89,121	4,667	29,184	9,670	38,548
June 30	4,903	4,999	220,781	15,546	86,472	4,910	32,213	9,077	40,488
July 28	4,930	4,996	218,507	16,106	86,008	4,598	36,071	9,586	42,283
August 25	4,982	4,931	[4]211,813	15,986	84,693	4,960	39,782	9,356	46,201
September 29	4,357	3,812	222,387	11,913	79,552	3,940	43,689	7,047	46,853
October 27	4,273	4,838	224,230	15,530	74,335	5,159	43,472	8,691	45,943
November 24	4,469	4,648	219,363	15,681	83,184	4,802	45,258	8,800	47,474
December 29	4,474	4,729	218,918	14,546	95,205	5,055	36,651	8,765	42,447
1946:									
January 5	4,548	4,651	218,193	14,488	98,494	5,293	35,199	8,867	42,371
January 26	4,626	4,553	220,544	13,622	101,737	5,720	29,498	8,411	39,722
February 23	4,714	4,595	226,699	13,175	104,709	5,728	25,398	7,913	39,290
March 2	4,726	4,779	229,430	13,871	104,462	5,888	25,148	8,634	38,441
March 9	4,403	4,656	226,112	13,669	104,901	6,929	25,131	8,779	38,388
March 16	4,415	4,607	226,233	13,850	104,781	5,655	25,747	8,382	37,767
March 23	4,431	4,683	225,153	13,732	104,562	5,514	26,667	8,596	37,906
March 30	4,425	4,684	224,994	13,896	104,715	5,357	28,240	8,738	37,746
April 6, 1946	**4,446**	**4,523**	.....	**13,718**	**104,226**	**5,060**	**29,253**	**8,401**	**37,289**
April 7, 1945	**4,784**	**4,720**	[5]223,782	**14,663**	**96,611**	**4,627**	**27,046**	**9,138**	**40,816**
Change:									
In week	+21	−161	−159	−178	−489	−297	+1,013	−337	−457
In year	−338	−197	+1,212	−945	+7,615	+433	+2,207	−737	−3,527
In year	−7.1%	−4.2%	+0.5%	−6.4%	+7.9%	+9.4%	+8.2%	−8.1%	−8.6%

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944. [3] Lowest since October, 1922, due to shutdown of six mid-Continent states. [4] Lowest since December, 1921. [5] Stocks, March 31, 1945.

26 Vets Rejoin Humble's Production Department

Humble Oil & Refining Company has announced the return of 26 men from the armed forces to the supervisory personnel of the production department.

The veterans and the posts they are occupying are as follows: M. U. Bateman, chief clerk, Heyser gasoline plant; V. A. Carpenter, assistant chief clerk, Friendswood district, Gulf Coast Division; D. D. Dennison, production accounting department; W. W. Petty, assistant chief clerk, Andrews district, West Texas division; V. L. Wimberly, chief clerk, Katy, Texas, products line construction district; Philip E. Barber, Jr., assistant division civil engineer, Gulf Coast division; William B. Burklin, civil engineer, East Texas division; William A. Castille, assistant division civil engineer, Louisiana division; Everett C. Clark, civil engineer, Gulf Coast division; Murray H. Cunningham, district civil engineer, Natchez, Miss., district; O. L. Fontenot, senior civil engineer, West Texas division; Nathaniel Ford, civil engineer, Houston; F. S. Godbold, civil engineer, Louisiana division.

Andrew M. Gruy, civil engineer, Gulf Coast division; Dudley J. Lewis, civil engineer, Houston; H. E. Lott, civil engineer, Houston; Eugene H. McGann, civil engineer, Southwest Texas division; Richard C. Newsome, district civil engineer, Gulf Coast division; J. U. Parker, civil engineer, Southwest Texas division; G. B. Randolph, district civil engineer, Louisiana division; Everett T. Shahan, civil engineer, East Texas division; Charles M. Sherfesee, civil engineer, East Texas division; J. M. Spiller, district civil engineer, East Texas division; John S. Toler, district civil engineer, Louisiana division; Wyatt G. Trainer, civil engineer, Southwest Texas division; Lloyd O. Zapp, supervising engineer, Houston.

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Gas Moved Through Proposed California Line Should Cost More, FPC Is Told

Adjourned hearings of the Federal Power Commission on the proposed 1000-mile pipe line linking West Texas gas fields with Southern California got under way in Los Angeles April 8. Initial hearings were in Washington last February.

Applicant companies are El Paso Natural Gas Company, El Paso, and Southern California Gas Company and Southern Counties Gas Company, Los Angeles.

It was pointed out that the $13.25 net increase per ton in the price of pipe for the line, resulting from the steel strike, will necessitate more money for the product delivered through the line. This increase will be from an original price of 11 cents per 1000 cubic feet to 13½ cents, which has been agreed upon between the seller, El Paso Natural Gas, and the buyers, the two California companies.

First witness on the stand was Paul Kayser, president of El Paso Natural Gas. He explained how the big increase in cost of pipe brought about changes in original plans for the line. He said that the initial estimates had taken into consideration the possibility of around $5 a ton net boost on steel to be absorbed by the company.

"This we were willing to do," he commented, adding that "the $13.25 cannot be absorbed and make the deal profitable for the company."

Kayser said financing had been arranged to take care of the added cost of the pipe line, amounting to $2½ million. He declared that the only hurdle remaining to be cleared before construction can begin is FPC approval.

Unofficial guesses between sessions were to the effect that this approval might be forthcoming as early as June 1. That the line will be built appears to be a foregone conclusion.

California oil companies, which account for all of the natural gas produced in California, are not opposing the granting of the application.

Testimony by A. Payson Dixon of the New York firm of Brokaw, Dixon and McKee, petroleum engineers and geologists, bore out prior testimony as to the almost limitless supply of natural gas in the West Texas area to be tapped by the proposed pipe line.

Pumping Units Completed on Empire's Lake Charles Line

Empire Pipe Line Company has completed additional pumping units at Sour Lake station on its 12-inch trunk line to Lake Charles, La., to boost the capacity from 55,000 barrels to 70,000 barrels daily. This line is the largest source of crude supply for the Cities Service Refining Corporation's Lake Charles plant.

☆ ☆ ☆ ☆

$6 Million Contract Awarded For 214 Miles of 30-Inch Pipe

Award of a $6 million contract for 214 miles of 30-inch steel pipe to Consolidated Steel Corporation was revealed as the second day's FPC hearing on the proposed 1000-mile Texas-California gas pipe line opened Tuesday in the State Building, Los Angeles.

Testifying before the Federal Power Commission Fred A. Hough, executive engineer of the Southern Counties Gas Company, stated that his firm and the Southern California Gas Company have completed arrangements with Consolidated Steel for approximately 38,000 tons of pipe. This pipe will be required for the California link of the pipe line between Blythe and Santa Fe Springs. Final approval of the contract must be given by FPC. Consolidated Steel expects to begin fabrication of the pipe in September. It is reportedly the largest diameter of this particular type of pipe ever constructed by a West Coast firm.

FPC Postpones Hearing on Plans for 825-Mile Gas Line

The Federal Power Commission has postponed indefinitely the hearing set for April 15 on an application of the Metropolitan Eastern Corporation for a certificate of public convenience and necessity to construct and operate an 825-mile, 18-inch natural gas pipe line from the Carthage gas field in Panola County, Texas, to the vicinity of Hamilton, Ohio. The postponement was requested by the company.

The proposed line, with appurtenant facilities, including five compressor stations having an aggregate of 25,600 horsepower, and a dehydration plant, will cost an estimated $23½ million. The project would have an initial daily capacity of 140 million cubic feet of gas, intended to be sold to distributing companies.

New York-Pennsylvania Loop Line Is Authorized by FPC

The Federal Power Commission has granted authority to the Iroquois Gas Corporation and United Natural Gas Company to construct approximately 20 miles of 16-inch loop line between the two systems from Little Valley, N. Y., to McKean County, Penn., at a cost of $530,000, to provide additional gas supplies for the Buffalo area.

A hearing scheduled for April 15 on the application of Metropolitan Eastern Corporation for authority to construct an 825-mile, 18-inch natural gas line from the Carthage gas field in Panola County, Texas, to the vicinity of Hamilton, Ohio, at a cost of $23½ million, has been postponed indefinitely at the request of the company.

Construction Begins on Two of Great Lakes' Midwestern Links

Construction is under way on two more midwestern links of the Great Lakes pipe line system.

The Williams Brothers Corporation has started work on an eight-inch refined products line in southeastern Kansas. The line will run from Humboldt in the Humboldt-Chanute pool of Allen and Neosho counties, Kansas, 40 miles west to the Neal station, and probably will be completed in 60 days.

Williams Brothers also have the contract for the 90-mile northern half of Great Lakes' eight-inch line from Kansas City, Mo., to Omaha, Neb. Work is to begin about April 25.

Midwestern Engineers, Tulsa, have begun work on the southern half of the line.

48-Mile Line Planned from Merigale Field, East Texas

Bobby Manziel, Gladewater, Texas, producer, and associates propose to construct a 48-mile, four-inch crude line from the Merigale ten-well field, Wood County, to the north end of the East Texas field, where connection will be made with a major carrier.

The field produces 28 to 31-gravity asphalt oil from the sub-Clarksville sand, and is prorated to 450 barrels daily. Actual production has been restricted to occasional tank truck shipments since Manziel discovered the area in December, 1944. An extension to the nearby Manziel multi-pay field, which produces low and high-gravity crudes and condensate, may be included in the project as the tank car outlet has provided a market for only a small portion of the 2100 barrels daily allowable since last fall.

API Makes Announcement Of Pipe Line Committees

C. H. Kountz, Sinclair Refining Company, New York, chairman of API's Central Committee on Pipe Line Transportation of the Division of Transportation, has announced committee appointments including:

Topical committee on pipe line technology: H. H. Anderson, Shell Pipe Line Company, Houston, chairman and James E. Moss, Washington API office, secretary. Subcommittee on internal corrosion of gasoline pipe lines, A. H. Riney, Phillips Petroleum Company, Bartlesville, Okla., chairman. Subcommittee for joint ASME-API volumeter research, L. S. Wrightsman, Humble Pipe Line Company, Houston, chairman and E. W. Jacobson, Gulf Research & Development Company, secretary. Subcommittee on cathodic protection, L. F. Scherer, Texas Pipe Line Company, Houston, chairman.

Conference subcommittee on accounting regulations: Fayette B. Dow, Washington, D. C., chairman and C. H. Gompf, The Ohio Oil Company, Findlay, Ohio, vice chairman.

Committee on valuation of pipe lines: D. S. Bushnell, Northern Group of Pipe Lines, New York, chairman and Fayette B. Dow, Washington, D. C., secretary. Engineers-accountants valuation subCommittee, C. M. Rosebrugh, Gulf Refining Company, Houston, chairman and Fayette B. Dow, Washington, D. C., secretary.

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U.S. Citizens to be Paid for Losses Under Polish Nationalization Laws

Efforts of the State Department to insure that American owners of property taken over by the Poilsh provisional government in its nationalization of industry shall be compensated have been temporarily suspended as a result of Polish representations that no negotiations can be undertaken until after issuance of numerous orders and regulations implementing the nationalization law enacted January 3.

Assurances have been given, however, that United States citizens who believe themselves affected by the law will receive compensation on an equal basis with Polish citizens.

In the meantime, the Polish government has informed the department that it will consider applications of American citizens to enter Poland to acquaint themselves with the state of industrial enterprises owned by them in that country before September 1, 1939.

The State Department has announced that it is prepared to lend its assistance in transmiting requests for entry permits to the Polish government through the American embassy at Warsaw, and said that entry permits should be requested when application is made for passports.

At the outbreak of the war in September, 1939, Poland had 27 fields with 3822 wells. Thirteen of the fields, with 1646 wells, were in Jaslo and were taken over by Germany; the remaining fields were in Drohobycz and Stanislawow, and were taken over by Russia.

Poland also had 29 refineries with a crude capacity of 23,050 barrels daily and a cracking capacity of 2300 barrels daily. Latest figures show Poland's annual consumption of petroleum products as 3,350,000 barrels in 1938, or slightly less than her 1938 production of 3,898,000 barrels.

Germany Expected to Meet Her Own Petroleum Needs

Plans for the level of postwar German economy in accordance with the Berlin Protocol have been approved by the Allied Control Council, the War Department has announced. Under it no production whatever will be permitted of synthetic gasoline and oil or rubber.

Automotive production will be restricted to 40,000 passenger cars and 40,000 trucks a year, together with 10,000 light motorcycles. Permitted also will be 44,000 light road tractors and 10,000 light agricultural tractors.

The program provides for an anticipated postwar population of 66,500,000, whose living standards are not to exceed the average standard of living in other European countries excluding the United Kingdom and Russia.

Germany will be expected to meet her petroleum needs from domestic production, since no provision is made for imports. Rubber supplies will be limited to 50,000 tons a year, of which 20,000 tons is to be reclaimed and 30,000 tons imported.

The schedule of industrial operations contemplates a reduction in the level of industry as a whole to a figure about 50 or 55 percent of the prewar level in 1938, except for the building and building materials industries.

Canada Plans to Adopt Block System of Granting Leases

The Canadian government is planning to change its system of petroleum leases from the checkerboard method to the block system, to encourage large oil companies to prospect for oil in British Columbia, Lands Minister E. T. Kennedy announced.

Under the block plan the province will retain an equal interest in any structure with a company that drills. Under the checkerboard method the province retains title to each alternate section.

The act, drafted in 1944, apparently retarded operations, Kennedy said.

Russians Set off Blasts on Sea Bottom in Search for Oil

Soviet geologists are using seismographic recordings of blasts produced by charges dropped to the sea bottom to detect oil under the Caspian Sea, the Russian press reports.

Motorboats assigned to surveying flotillas proceed to sites selected and charges are dropped. Seismographs, connected with recorders on the boats, are dropped a short distance away from the charges.

Interpretation of seismograph recordings, which reveal vibrations of the soil to a depth of three miles, indicates the possible presence or absence of oil. Some of the under-water oil fields discovered in this manner are already in operation, the Russian report said.

Union Oil Prepares to Drill In Paraguay Chaco Territory

Union Oil Company of California is expanding its geophysical exploration in the Chaco Territory of Paraguay and is preparing to drill the first test well in the western part of the area. A second geophysical party now being organized will increase the tempo of this phase of the work, while the drilling of the exploratory well will furnish geological information in a section of the country where surface outcrops are notably lacking.

Initial shipments of transportation, road-working and construction equipment have been delivered to the Chaco and most of the equipment for the drilling operation is en route to Paraguay. Actual drilling will start about the middle of the year.

The long line of communication involves the use of marine transportation from California, Gulf and East Coast ports to Buenos Aires and Montevideo where cargo is transshiped to river boats and barges for the journey up the Rio Paraná and Rio Paraguay to Puerto Casado. At this river port the material is transferred to a narrow gauge railroad which extends about 100 miles westerly into the Chaco. From the railhead the company's trucks take over the job of hauling equipment and supplies to the location.

First Shipment of Borneo Oil Is Received in Australia

First shipment of crude from Borneo since the Japanese occupation reached Australia during the latter part of March, less than six months since the last fire in the fields was extinguished.

Shell Oil Company has opened its refinery at Clyde to treat the shipment and in anticipation of regular deliveries from Borneo.

Factors Affecting Volume Of Natural Rubber Outlined

Factors affecting resumption of rubber output in the Far East were outlined last week by E. G. Holt, rubber advisor to the industry division of the Department of Commerce.

Favorable factors were the need of those areas for American exchange with which to purchase desired goods, the fairly satisfactory condition of trees generally reported, and the availability of indigenous labor.

Adverse factors include disturbed political conditions, shortage of consumer goods, malnutrition of workers and disruption of transportation.

"New production in liberated areas in 1946 will depend chiefly on what is done to stimulate and facilitate trade with native rubber producers," Holt said. "Their potentialities are large. With an assured start of some production on estates in British Malaya in 1946, fractional output by native producers would be sufficient to meet the estimate of 1946 arrivals in consuming countries of 197,000 tons from new production in the liberated areas.

"Rubber output is subject to swift changes, and since present estimates are conservative, there may be a more rapid increase in production than seems probable. Settlement of political troubles would change the picture; even without settlement, the huge production potentialities of Sumatra should not long be completely bottled up.

Business by Plane

Plans for a fleet of seven new airplanes to be used by Standard Oil Company (Indiana) in transacting company business were announced by President A. W. Peake. Two planes have been delivered, two more have been purchased, and three others will be bought in the near future. Standard of Indiana became the first commercial organization to own and operate an airplane as part of its business equipment when it bought its first plane in 1927.

☆ Oklahoma

Saturation at Less Than 100 Feet Found in Caddo County

Oil saturation at less than 100 feet reported southwest of Apache in Caddo County; Garvin County discovery testing; southwest Oklahoma wildcat pumps oil; Carter's McClain County wildcat sets pipe and tests; old Dora pool of Seminole County gets major production.

Caddo County: A "grass root" oil sand has been found southwest of Apache by Nail-Reed Oil Company's Coyle 1, NE NE NE 33-5n-12w. A spudder hole is being started to test the sand, encountered from 44 to 74 feet and reported to be well saturated. The Coyle 1 will continue to contract depth of 2500 feet unless oil or gas is found in paying quantities at a lesser depth. The well is about 4½ miles south of the Apache field, nearest production.

Garvin County: An important discovery on the southeast edge of the Amarillo-Anadarko basin, the R. H. Dearing & Sons' McBride 1, NE NW NW 30-4n-2w, southwest of Maysville, has started testing with good results. Casing was perforated from 6586-91 feet opposite the Pennsylvanian with an estimated 3 barrels of 66 degree condensate per hour and 1½ million to 1¾ million cubic feet of gas per day. There was no salt water. Total depth is 6665 feet and 5½-inch casing was set to 6660 feet. Operators may penetrate a greater section of the sand zone before final completion.

Jackson County: The Texas Company's Hickman 1, SW NW NW 6-1n-19w, 2 miles east of the Altus pool of Jackson County in southwestern Oklahoma, has been drilled to 3017 feet in the Arbuckle and plugged back to 1569 feet. During a 9-hour testing period it pumped 10 barrels of oil with a little water from perforations at 1263-77 feet. Operators will make further tests.

McClean County: The Carter Oil Company's Thompson 1, NE SE 36-8n-4w, wildcat north of Cole in McClain County, set 7-inch casing to 10,120 feet after a difficult fishing job that took several weeks. With total depth 10,592 feet, operators plugged back to 10,430 feet and were bailing mud with puffs of gas but no free oil during initial tests.

Seminole County: The old Dora pool in southwestern Seminole County has been given major production by J. E. Hall and Troup-Moore Drilling Company's Ward 1, SE SW NW 3-6n-6e, on the southwest flank of the field. The semi-wildcat had the Earlsboro sand at 2542 feet, drilled to 2580 feet, set pipe on top, and after an 80-quart shot of nitro at 2550-70 feet, started filling tanks. Estimates place production at 500 to 600 barrels of oil a day but testing will not be completed until Gulf has finished laying a line to the well.

Missouri

Todd and Leuhring's Benson 1, 30-55n-29w, Caldwell County, was drilling from about 375 feet after casing for the well was pulled from a nearby dry hole.

Nodaway County: J. E. Palensky's Wallace 1, C SW NW NW 10-65n-36w, 16 miles northwest of Maryville, drilled plug at 2012 feet and found no showings. Operators plan to gun perforate opposite porous zones indicated on electrical log. The well has been drilled to the Mississippian and it was believed a showing of oil came from the bottom of the well when drilling, but possibly could have come from up the hole as a result of the application of acid when there was a twist-off at 1972 feet.

Nebraska

Power Oil Company's Bohrer 4, SE NW 10-1n-14e, in Richardson County, was drilled to the Viola lime with total depth of 2902 feet but abandonment is expected. After drilling in, the hole started making ¾ barrel of oil per hour and operators planned to let the well stand for a week or 10 days to see if the fill up would increase. However, the formation shut off around the bottom of the pipe and the hole filled with mud and water.

Houston Nomads

Houston Chapter, Nomads, commencing April 29 will meet the last Monday in each month. Their meeting place also has been changed and hereafter will be Ye Olde College Inn.

☆ Kansas

Stanolind Plugs Back Meade Wildcat to Test Lansing

Stanolind plugs back Meade County wildcat to test Lansing; Fort Scott lime producer in Arnold pool given 275-barrel potential; Ray pool in northwestern Kansas extended ½ mile west; Atlantic's Rooks County pool opener gets potential; Seward County wildcat dry.

Meade County: Stanolind Oil & Gas Company has plugged back to test the Lansing lime, topped at 4268 feet, in H. G. Adams 1, SW SW SW 7-35s-29w, 5 miles east of the Adams Ranch gas field discovered by the same company. After taking tools to 6338 feet, operators plugged back to 6228 feet to test the Mississippi, topped at 5848 feet. From perforations at 6018-40 and 6090-6125 feet, following acid treatment, the well pumped 52.32 barrels of oil and 4.34 barrels of water in 8 hours.

Ness County: Production from the Fort Scott lime has opened a new producing horizon in the Arnold pool, with Sohio Petroleum Company's Drake 3, NW SW NW 26-16-25w, assigned a daily potential of 275 barrels. The well,

Wells Completed in the United States in Week Ended April 13, 1946

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second or third issue of each month. More detailed data on wildcats published in third or fourth issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama	....	....	....	....	....	....	....	....	....	....	....	....	5	5
Arkansas	2	....	....	1	3	....	....	....	....	....	3	7	49	35
California	27	1	....	1	29	2	....	....	6	6	37	35	530	573
Colorado	3	....	....	....	3	....	....	....	1	1	4	1	29	9
Florida	....	....	....	....	....	....	....	....	1	1	1	....	6	4
Georgia	....	....	....	....	....	....	....	....	....	....	....	....	1	2
Illinois	28	....	....	18	46	....	....	....	6	6	52	37	539	460
Indiana	4	1	....	1	6	....	2	....	1	3	9	15	94	78
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	....	1
Kansas	19	5	1	7	32	2	2	1	2	5	39	30	583	410
Kentucky	5	....	....	4	9	....	....	....	3	3	12	4	142	133
Louisiana	13	2	....	....	15	....	2	1	7	10	25	24	353	265
North Louisiana	7	2	....	....	9	....	....	....	2	2	11	15	180	81
South Louisiana	6	....	....	....	6	....	2	1	5	8	14	9	173	184
Michigan	3	....	....	4	7	....	1	....	5	6	13	8	185	198
Mississippi	4	1	....	....	5	....	....	....	....	....	5	6	67	105
Missouri	....	....	....	....	....	....	....	....	....	....	....	1	5	13
Montana	5	....	....	1	6	1	....	....	....	....	7	3	64	56
Nebraska	....	....	....	....	....	....	....	....	....	....	....	....	....	2
New Mexico	7	1	....	1	9	1	....	....	1	1	11	4	115	141
New York	15	....	10	....	25	1	....	....	....	....	26	28	279	256
Ohio	6	3	....	3	12	....	....	....	....	....	12	8	287	210
Oklahoma	21	2	1	14	38	1	....	2	5	7	46	48	737	641
Pennsylvania	28	4	15	1	48	1	....	....	....	....	49	51	806	794
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Texas	101	5	4	16	126	3	3	1	24	28	157	162	2,245	2,005
E.Tex.Por. Co.'s	....	....	....	....	....	....	....	....	....	....	....	3	47	24
Rest of E. Texas	9	....	....	....	9	....	....	....	1	1	10	10	146	56
North Texas	24	....	3	7	34	....	....	....	6	6	40	45	625	439
W. Central Tex.	6	1	....	2	9	....	1	....	6	7	16	6	173	121
West Texas	23	....	....	3	26	1	1	....	1	2	29	36	472	531
Tex. Panhandle	6	1	....	....	7	1	....	....	2	2	10	9	133	176
G. Coast, Upper	8	2	1	1	12	....	1	1	3	5	17	20	208	201
G. Coast, Lower	22	....	....	1	23	1	....	....	1	1	25	24	301	289
Southwest Texas	1	1	....	2	4	....	....	....	3	3	7	7	103	144
S. Central Tex.	2	....	....	....	2	....	....	....	1	1	3	2	37	24
West Virginia	1	15	....	2	18	....	....	....	....	....	18	20	209	213
Wyoming	....	....	....	....	....	....	....	....	1	1	1	3	42	57
Total U.S.	292	40	31	74	437	12	10	5	63	78	527	495	7,373	6,666

* Includes distillate wells. † Includes salt water disposal wells.

which is a south extension to the pool, is the first Fort Scott producer in the field and among the rare Fort Scott producers for Western Kansas. Drake 3 topped the Fort Scott at 4432 feet and production is from perforations at 4432-36 and 4445-52 feet.

Norton County: The Ray pool of northwestern Kansas in Phillips and Norton counties has been extended ½ mile west by Cities Service Oil Company's Finnigan 1, SW SE SE 25-5s-21w. A draw-down potential rated the well at 1165 barrels a day. Production is from Reagan sand topped at 3678 feet.

Rooks County: The Atlantic Refining Company's Carmichael 1, SE SE 16-9s-17w, has opened production in the Nyra pool and was accorded a permanent pump potential of 35 barrels a day. Production is from perforations at 3429-35 feet in the Lansing lime. Total depth is 3547 feet in the Arbuckle.

Seward County: Five miles west of its major gas discovery on the Adams Ranch in southwest Meade County, Stanolind's Adams Gas Unit 1, CN½ S½ NW 14-35s-31w, has been completed as a dry hole after extensive testing. This wildcat is 10 miles west of Stanolind's H. G. Adams, another wildcat being tested in Meade County. The Adams Gas Unit 1 was drilled to 6800 feet and plugged back to 6202 feet, where a swab test showed 2 barrels of water per hour with a scum of oil.

☆ West Texas

Hale County Gets First Oil Producer in Major Extension

Hale County lists first oil producer through major extension to Anton field; Devonian pay discovery in the North Goldsmith field has natural flow, while confirmation well shows oil; Keystone field's producing zones increased to 6, with 3 more available in Simpson and pre-Ellenburger.

Hale County: Stanolind Oil & Gas Company's Irish 1, C NE NE HE&WT Ry. 18, Block D-T, 3⅝ miles east and 200 feet higher structurally than the Anton 6-well field, was running 7-inch casing to complete after heading oil when tester was used at 5800-56 feet. A later test at 5853-81 feet yielded 30 feet of rotary mud, 450 feet of oil, 165 feet of oil-cut mud and 45 feet of salt water. Irish 1 was originally scheduled to explore the Ellenburger, and registered its first oil show when tester was used at 5548-5700 feet, with oil and water showing on a test at 5806 feet. Nominal zones of water between oil levels prevail in the Anton field, which is on a deep-seated granite ridge that trends east-west. A series of fields are anticipated along this trend. Irish 1 entered the San Andres at 3185 feet and San Angelo at 4135 feet with elevation 3428 feet.

Hockley County: Humble Oil & Refining Company's Campbell 1, a mile south of the Anton field discovery and a failure in the Clear Fork pay, was drilling barren Ellenburger at 9330 feet. It will proceed to the granite for geological information.

Ector County: Stanolind's Grisham-Hunter 1, which recently proved the North Goldsmith field for Devonian production in making an oil flow through tester, confirmed this showing in flowing 207 barrels of 43.2-gravity oil, with gas-oil ratio 926/1, on 10¾ hours natural test through ¼-inch choke from open hole at 7956 feet. The Devonian was entered at 7919 feet, or 63 feet high to Stanolind's Williamson 1, 1¼ miles west by south. The latter tested water in Ellenburger at 10,198-10,290 feet, and when plugged back to 8500 feet swabbed 16½ barrels of oil on a 5-hour test. This showing is from the Devonian, topped at 8045 feet. A commercial well is virtually assured.

Phillips Petroleum Company et al's Eidson-Scharbauer Unit 1, previously listed as having opened the Penwell field for Ellenburger production, established the water table in drilling to 9020 feet, or 132 feet in the dolomite. Pipe was cemented at 9020 feet to complete through perforations. A thick section of oil pay was anticipated as it is 685 feet high to a 8675-foot failure 2¼ miles southwest, and the latter drilled 85 feet in the Ellenburger before reaching water.

Cities Service Oil Company's Parker-Wentz 1, Harper area, was awaiting orders at 10,620 feet in Devonian lime, topped at 10,320 feet, or 3041 feet low to the Penwell deep strike. Parker-Wentz 1 yielded 350 feet of gas-cut mud with a trace of oil at 10,489-10,580 feet, but this showing hardly justifies running pipe for a production test. Stanolind et al's Kayser Unit 1, Foster area, was drilling limey-chert at 11,465 feet.

TXL Field: Shell Oil Company's T.P. Land Trust 1-L, C SW SE T&P 5, Block 45, T-1-S, north edge of the field, emphasized the possibilities of Simpson (McKee) sand production previously encountered by Ellenburger tests in recovering 7792 feet of 37.6-gravity oil when tester was used at 9054-73 feet. This zone and the prolific Silurian are restricted to the Ellenburger producing area and neither will be tapped until operators decide to start twin drilling, as the Ellenburger affords greater yield per acre. Shell and Arkansas' Thomas 1-E, southwest edge of the field and a failure in the Devonian, swabbed 176 barrels on 16-hour test of Basal Permian perforations at 7545-7695 feet. Other tests indicated oil production from this upper zone. The Superior Oil Company's Cochran 1 is the lowest top of the Devonian to make a producer, and pumped 229 barrels of oil and 27 barrels of water after acidizing perforations at 8048-65 feet.

Winkler County: The Pure Oil Company's Cowden 1, C SE SE PSL 26, Block B-5, west offset to the Emperor-Holt 4800-foot oil discovery, caught fire following gas blowout at 2440 feet, and destroyed the rig owned by Geo. P. Livermore, Inc., contractor. Fire fighting specialists were engaged to clear the site and kill the flow. This well entered the Yates gas zone at 2320 feet, or 5 feet high, and the gas volume was estimated at 25 million cubic feet daily. Texas Pacific Coal & Oil Company's Brown-Altman 2, east offset to its discovery, entered the Yates at 2310 feet, or 10 feet high, and was drilling lime at 4150 feet.

Stanolind and Westbrook-Thompson Holding Corporation's Hendrick 35-A-T-88, Ellenburger project for the Hendrick field, was drilling lime and shale at 10,310 feet.

Midland County: Humble Oil & Refining Company's Crespi 1, ¾ mile northwest of its Midland field flowing discovery in the Pennsylvanian at 10,370-390 feet, failed to complete a drill-stem test at 10,354-430 feet, and deepened to 10,441 feet in lime and chert, where a test was pending. No shows have been recorded by this second test for the area.

Reeves County: Argo Oil Corporation's Roberts 1, wildcat that has been showing gas and distillate at intervals below 9941 feet, recovered brown lime with streaks of shale in core at 10,215 feet.

Sutton County: Shell's Wilson 1, 20 miles south by west of nearest production, was drilling barren Ellenburger at 5730 feet. This wildcat passed up indicated gas production in the 4200-foot Pennsylvanian, and will plug back for further test after reaching the water level in the Ellenburger.

Kent County: Humble's Vick 1, which confirmed flowing production from the Ellenburger, topped at 7773 feet, before reaching formation water at 7892-7938 feet, was preparing to perforate for completion. This pending discovery will result in the eventual construction of a direct pipe line outlet, while it has caused a widespread lease buying campaign in the general area.

Keystone Field: Stanolind's Taylor 1, a mile east of Ellenburger production, flowed 617 barrels of 32-gravity oil, with gas-oil ratio of 536/1, on official test through 16/64-inch choke after using 4000 gallons of acid through Devonian perforations at 8040-8135 feet. This outpost entered the Ellenburger at 10,245 feet, or 607 feet low, and reached water in drilling to 10,280 feet. It is the first Devonian producer, although many El-

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lenburger wells passed up flowing production from this zone.

Gulf Oil Corporation's Keystone 69-E, which tested a prolific flow of gas-distillate from weathered granite in drilling to 9871 feet, was making a preliminary test of Ellenburger perforations at 9610-36 feet, with pipe at 9660 feet, or 10 feet below the dolomite. The deep gas-distillate zone will be generally held back for future withdrawals. Richardson & Bass, Inc.'s, Walton 31-E, southeast offset to a failure on the west edge of the Ellenburger area, was drilling granite wash at 9783 feet, having passed up flowing production from Ellenburger, topped at 9050 feet.

Andrews County: Shell's Nelson 1, C NE SE PSL 8, Block A-40, which tested oil and gas-cut mud from an Ellenburger section at 10,390-10,453 feet, has run pipe to try for completion. This wildcat is 228 feet high to a failure 1¼ miles west by south. Shell is starting Pinson-Humble 1 about ¾ mile southwest to forestall April 20 expiration. Both tests are on acreage obtained from Humble.

Stanolind's University 4-O, ¾ mile northwest of the Fullerton-Devonian field's single Ellenburger producer, entered the Ellenburger at 10,618 feet, or 3 feet low, and recovered 165 feet of oil and 10 feet of mud when tester was used at 10,647 feet. It will be deepened before running pipe. The discovery well of this zone only had 84 feet of effective pay above water.

☆ North Texas

Sixth Oil Zone Established In Wilbarger County Field

Sixth oil zone established in the National field, Wilbarger County; Knox County is assured its first oil producer; Sivels Bend field Strawn failure to deepen to Ellenburger.

Wilbarger County: National Associated Petroleum Company's A. C. Smith 1, NW NW NE H&TC Ry. 30, Block 13, established the sixth oil level for the National field in flowing 240 barrels of 39 gravity oil, with gas-oil ratio 300/1, on potential test through ¼-inch choke after using 500 gallons of acid in open hole at 3659-75 feet. This flow is from the Rock Crossing zone, topped at 3658 feet, and is on the southeast side of the field. The company has 16 producers and a failure, although several tests are inactive.

Knox County: L. S. Youngblood-R. L. Foree et al's Ross Bates 1-A, SW SW SW D&W Ry. 1, Block 2, has cemented pipe to complete after showing for the first producer for the county. This wildcat recovered 60 feet of 38-gravity oil and 135 feet of oil-cut mud when tester was used in the Cisco broken sand series at 1603-20 feet. The partnership drilled 2 failures before locating the high point of the structure, including Bates 1, which showed oil and water at 1675-82 feet after plugging back from 4510 feet in Strawn, topped at 3264 feet with elevation of 1408 feet.

Cities Service Oil Company's Mulkey 1, 2 miles south of Truscott and an Ellenburger prospect, was drilling shale at 5080 feet.

Cooke County: Sun Oil Company et al's Midkiff-Davis Unit 1, Sol Gann Survey and on the southeast side of the Sivels Bend field, failed to encounter production in drilling Strawn to 7601 feet and will deepen to 8900-foot Ellenburger.

Greater emphasis is being placed upon the 3900-foot Strawn oil zone uncovered in December by Jas L. Anderson and Seitz, Comegys & Seitz Inc.'s Mooney 1 on the west flank of the Wilson 2400-foot field. This lower sand has accounted for 4 producers, with several in process of completion, and promises to extend south to parallel the east flank of the old Anderson-Kerr field.

☆ East Texas

Van Zandt County Test Has Nominal Show in Travis Peak

Van Zandt County wildcat has nominal show in Travis Peak; second test under way in Mount Sylvan area.

Van Zandt County: V. J. Meyer and Danciger Oil & Refineries' Meredith 1, R. C. Morris Survey and 5 miles northwest of the Myrtle Springs deep area, logged some evidence of porosity and saturation in the upper section of the Travis Peak, topped at 7955 feet. Electrical formation survey to 8016 feet confirmed the showing, and the test was drilling at 8090 feet. This wildcat correlates about 550 feet high to the Myrtle Springs wells. Delta Drilling Company's Martin 1, A. T. Flowers Survey and 3½ miles southeast of the Tundra 1-well field, was drilling in the Glen Rose at 7060 feet, correlating low for the area.

Bowie County: Barnsdall Oil Company et al's Pickering 1, 2 miles southwest of Texarkana, was plugging back from 7258 feet to complete in the Smackover lime zone at 7030-94 feet, where gas-distillate production was indicated. Deepening operations proved the lower Smackover barren.

Smith County: Edwin Pace and Gordon MacLean's Johnson 1, Andrew Kent Survey and ¾ mile southeast of Humble Oil & Refining Company's pending discovery for the Mount Sylvan area, has landed intermediate string of pipe at 1630 feet. Reports indicate Humble will move in rig to perforate and complete opposite the effective saturation logged in drilling the Paluxy to 7601 feet.

Phillips Petroleum Company's Greeling 1, reworked failure for the South Tyler field, was penalized in allowable to 25 barrels daily due to excessive gas-oil ratio. This well flowed 83 barrels of 54.9-gravity distillate, or crude, with gas-oil ratio of 15,690/1 natural through ¼-inch choke. The production is from the James lime perforations at 9990-10,014 feet. It was abandoned without a test in March, 1945, at 10,986 feet, or 486 feet in the barren Travis Peak.

Wood County: W. F. Bridwell and Bobby Manziel's Coker 1, ½ mile north of Crow and a 7500-foot prospect, was drilling shale at 4580 feet, having logged Pecan chalk at 3350-3740 feet. Gulf Oil Corporation's Brewer 1, which discovered the Winnsboro field in March, 1944, with oil flow from Bacon (Rodessa) lime perforations at 7990-8014 feet, has been recompleted as a 60-barrel pumper. Water cut short the flowing life of this discovery.

East Texas Field: Sixty-four depleted producers were plugged during March as compared with 39 in February. However, the field added 5 producers the past month through new completions on small leases, while further additions are in prospect. A major company has applied for permits to drill 4 new wells to match offset drainage.

☆ East Texas Border

Gas-Distillation Production Tested Southwest of Avinger

Gas-distillate production tested 3 miles southwest of Avinger in Marion County; test on northwest flank of Carthage gas-distillate structure may establish crude production in lower Petit; wet gas production indicated ½ mile south of Beckville.

Marion County: Magnolia Petroleum Company's Orr 1, Fowler Survey, 3 miles southwest of Avinger, which made a gas show in the Cotton Valley, was testing gas-distillate. Estimates from volume test run indicated 5 million cubic feet of gas and 250 barrels of distillate under ½-inch choke. This wildcat, which attracted widespread attention when oil in commercial quantity was indicated in the Travis Peak, tested 2,600,000 cubic feet of gas, 126 barrels of distillate, and 100 barrels of water with little mud on a 13¼-hour flow. Production was from perforations between 9025-35 feet. Rogers Lacy and Allied Oil Company's DeWare 1, Walker Survey, Jefferson field, was reported idle for orders at 5995 feet in Travis Peak.

Harrison County: Bert Fields Furr-Vincent 1, Davenport Survey, Waskom area, had a small show of oil in 10 feet of porous sand at 3890-3909 feet, but is below 5660 feet on a Travis Peak test. The zone in which the show appeared was unidentified.

Panola County: Skelly Oil Company's Matthews 1, McFadden Survey, southeast of Beckville, northwest flank of the Carthage gas distillate structure, was reported testing an estimated rate of 20 to 35 barrels of 41-gravity oil per hour through ⅜-inch tubing choke. This development is considered apparently establishing production from the lower Pettit zone in a field normally productive of gas and distillate. Until testing was resumed recently, the well had been shut in since October, after it had made considerable oil in a 15-minute test at 6262-85 feet. Gas-oil ratio on the new flow test was not reported, but was considered not to be excessive. The well also is making gas and distillate from the upper Pettit zone, topped at 6093 feet.

Since the big structure was outlined, oil interests in the field have played the Carthage flanks hoping to find lower Pettit crude pay, but Matthews 1 is the first well to indicate good commercial possibilities, although a Skelly test on the southwest flank was credited with having had oil shows in that zone.

Rogers Lacy of Longview, is moving in rig on a new test 1 mile northwest of his Cook 1, Deboise Survey, and because of the Skelly Company's Matthews 1 development, the result of the Lacy test will be watched with interest. Another outpost in that sector which is followed closely is Marsh and Crain's Roquemore 1, David Blankenship Survey, ½ mile south of Beckville city limits, which was reported drilling in Travis Peak at 6700 feet, with no reported shows, but has indicated wet gas production in the Pettit. It is understood the operators plan to test around 7000 feet.

Shelby County: Humble Oil & Refining Company is making location for a

QUICK TO ERECT BREWSTER 60-B

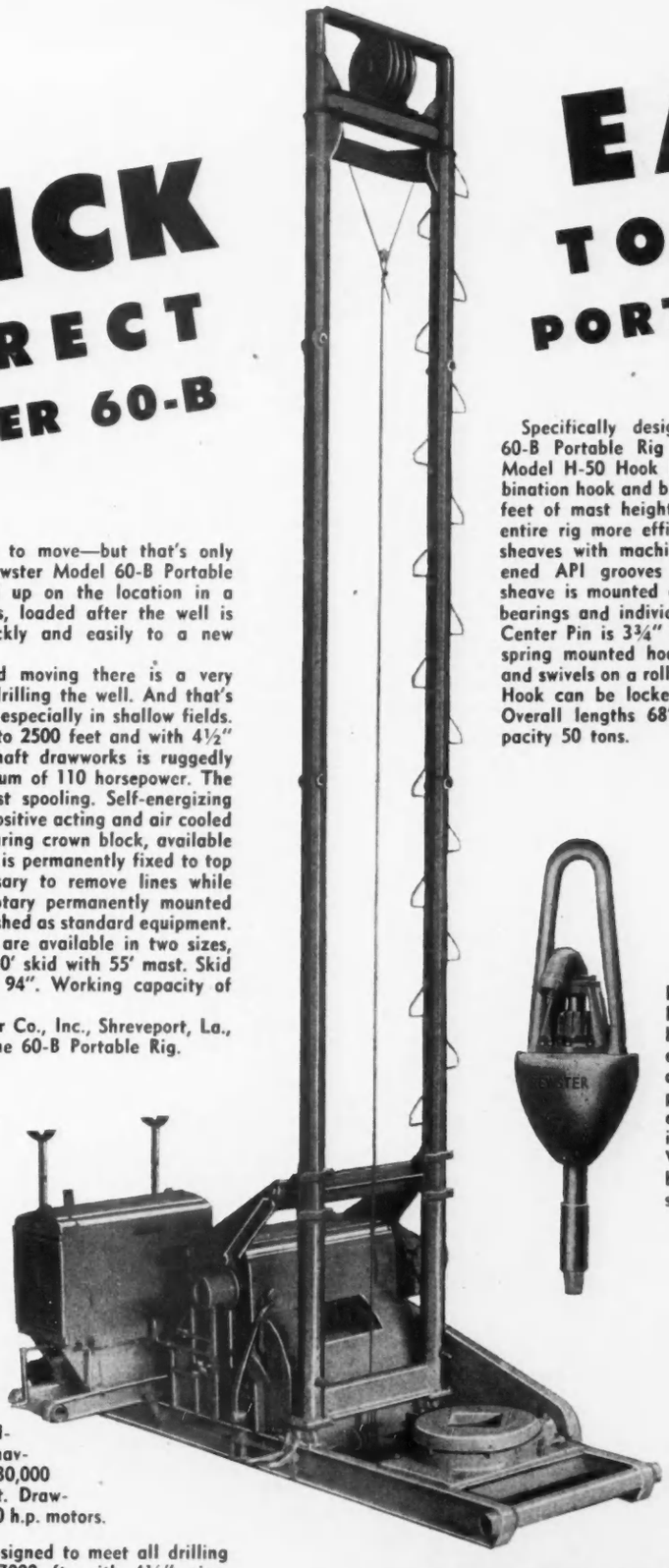
EASY TO MOVE PORTABLE RIG

Quick to erect and easy to move—but that's only part of the story of the Brewster Model 60-B Portable Rig. True it can be rigged up on the location in a matter of a few short hours, loaded after the well is completed and hauled quickly and easily to a new location.

But between erection and moving there is a very important job to be done—drilling the well. And that's where the 60-B fills the bill, especially in shallow fields. With 3½" pipe it will drill to 2500 feet and with 4½" pipe to 1800 feet. The 3 shaft drawworks is ruggedly designed to handle a maximum of 110 horsepower. The drum is full floating for fast spooling. Self-energizing brakes are easy to operate, positive acting and air cooled for long wear. The roller bearing crown block, available with 3-22" or 4-18" sheaves, is permanently fixed to top of mast making it unnecessary to remove lines while traveling. A 12" oil bath rotary permanently mounted in the drawworks skid is furnished as standard equipment.

The skid frame and mast are available in two sizes, 17' skid with 47' mast and 20' skid with 55' mast. Skid width is 54". Overall width 94". Working capacity of mast is 70,000 lbs.

Write or wire The Brewster Co., Inc., Shreveport, La., for further information on the 60-B Portable Rig.



Specifically designed to fit the 60-B Portable Rig is the Brewster Model H-50 Hook Block. This combination hook and block saves several feet of mast height and makes the entire rig more efficient. Three 22" sheaves with machined flame hardened API grooves are used. Each sheave is mounted on tapered roller bearings and individually lubricated. Center Pin is 3¾" in diameter. The spring mounted hook has 4" travel and swivels on a roller thrust bearing. Hook can be locked in 4 positions. Overall lengths 68". Maximum capacity 50 tons.

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N-10—this rig will handle wells down to 10,000 feet. A completely modern rig having advanced engineering features throughout. To be available for delivery in near future.

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SHREVEPORT, LOUISIANA, U. S. A.

second deep operation in the Huxley area, where its Pickering Lumber Company 1, St. Francois Survey, opened a new gas and distillate field from the Pettit lime zone from 6608-28 feet. The new test will be Pickering Lumber Company 2, about 4800 feet southwest of the discovery well. It will go to the Pettit. The discovery went to 12,221 feet in going through the Travis Peak zone, and found no worthwhile pay, finding gas and distillate in the Pettit, after failing at the deeper levels.

Cass County: W. B. Hinton has located J. O. Betts 1, A. S. Beard Survey, with projected depth 7800 feet, for the Marietta area's first deep wildcat test.

☆ South Central Texas

Dimmitt County Discovery Receives New Rig for Tests

New rig moved on Dimmitt County discovery for tests; Gonzales County discovery swabs oil and mud from Glenrose; Zavala County wildcat prepares for production test; oil show reported in Milam County confirmation well.

Dimmitt County: Barnsdall Oil Company's Henrichson 1, discovery 2 miles southeast of Valley Wells, has moved in a contract rig for a series of squeeze jobs and production tests. The well recovered 150 feet of gas-cut mud and 1500 feet of oil-cut mud on a drill-stem test from perforations at 5216-26 feet. Fluid recovered contained considerable cement particles, indicating the squeeze job failed to hold, so the squeeze was made again and the casing reperforated for a production test. Sands with oil odor were logged at 5214-30 feet and confirmed by side-wall samples. Gas sands in the Wilcox were logged at 3994-4034 feet. Total depth of the well is 5280 feet with 5-inch casing set to bottom.

Gonzales County: Extended efforts on the part of 2 operators have been made in an attempt to bring in commercial production from widely separated wildcats for new field discoveries. Quintana Petroleum Corporation's Spahn 1, 4 miles northwest of Gonzales, was acidized in an attempt to loosen the Glenrose formation after the well swabbed considerable mud with some oil from perforations at 8097-8100 feet. Bottom of the well is in the Smackover lime at 10,845 feet with 5½-inch liner set to total depth.

Amerada Petroleum Corporation's Henderson Unit 1, 5 miles southeast of Waelder near the Fayette County line, was drilling at 9722 feet in or near the Pettus zone. Edwards lime was topped at 8770 feet, the depth at which 7-inch casing was cemented. Several tests below the casing have shown sulphur water, and latest test at 9105-35 feet showed salt water.

Zavala County: David Ring & Raymond Arsht's Joe L. Matthews 2, wildcat 6 miles west of La Pryor, squeezed perforations at 2195-2203 feet in preparation for production tests. Earlier, the well was swabbed from these perforations with no shows indicated, but recovered asphalt from the Olmos sand. Total depth is 2230 feet and 7-inch casing is set to bottom.

Milam County: R. L. Holcomb et al's Byrd 3, 1020 feet west of the Holcomb 2 discovery well near Sharp, was testing in the Edwards lime after failing to get a satisfactory production test in the Austin chalk, topped at 1051 feet. The Edwards lime was topped at 1848 feet and cuttings indicated no shows of oil. A core from the upper section of the Georgetown lime at 1790-92 feet was reported to have made some show of oil. Total depth is 1865 feet.

☆ Southwest Texas

Production Attempt Set for Jim Hogg County Wildcat

Jim Hogg wildcat prepares for production test; first Pettus producer promised for North Albercas field; Sun prepares Webb County wildcat for gasser.

Jim Hogg County: F. A. Callery et al's Pena et al 1, ½ mile southeast of the Patel field discovery well and 2000 feet due east of Jay Simmon's Pena 1, dry hole, and in the southeast corner of Mrs. Eliza C. Barton Survey 579, was making preparations for production tests. Total depth is 3200 feet with 5½-inch casing set to 2889 feet.

Killiam-McLean's Holbein 1, wildcat in the Henne-Winch-Farris area, was drilling at 3380 feet.

Webb County: Blanco Oil Company & Al Buchanan's A. M. Bruni Estate 5, North Albercas field, promises to be the first Pettus sand producer for the field after recent test in that zone. Operators are preparing to set casing to complete as a gas well in the Pettus at 2520-24 feet. Production in the regular field is from sands just below 2310 feet, which did not make commercial shows in this well. On a 45-minute drill-stem test at 2520-24 feet, 15 feet of gas-cut mud were recovered and the well developed a flowing pressure of 98 pounds. Total depth is 2649 feet.

Sun Oil Company's Isaac Hirsch 2, wildcat 26 miles northeast of Laredo, has set casing at 7080 feet with total depth at 7350 feet in black shale, and was perforating at 6905-18 feet for a production test. The well made a show for gas production in the Wilcox between 6905-7020 feet. Almost solid gas sands were logged in this zone, and on a drill-stem test, the well developed 1500 pounds working pressure. Hirsch 3 is to be located southeast of No. 2.

☆ Lower Texas Coast

Discovery in Bee County Erects Flow Tanks for Test

Bee County discovery erecting flow tanks for test; second Yoakum rework well testing at 8300 feet; new sand at Gaffney field under test; Wilson field wildcat makes gas and water on test; Shell completes large gasser in Jim Wells County; Boyce field assured ½ mile extension.

Bee County: Bridwell Oil Company's Sliva Estate 1, discovery well, 9 miles southwest of Beeville and 4½ miles southwest of the Yougeen field gas production, was reported erecting flow tanks in preparation for an official potential gauge. With the pay zone in the Stillwell sand and perforations at 4378-88 feet, the well showed for clean oil production when originally swabbed in. Shut-in tubing pressure was 425 pounds and casing pressure was 1100 pounds. Total depth is 4555 feet with 5½-inch casing at 4445 feet.

DeWitt County: The Pure Oil Company's Karl 1, second well in the Yoakum field to be reworked and tested, preparing for production tests in the 8300-foot sands. The well was completed last month from perforations at 8663-65 feet in the Wilcox, but flowed half oil and half salt water with a high gas-oil ratio. This zone was squeezed and reperforated at 8610-20 feet where salt water was swabbed on another test. The well was then plugged back and squeezed through perforations at 8293-94 feet. Total depth is 11,334 feet and 7-inch pipe is set to 8720 feet.

Victoria County: Wiegand Brothers & R. E. Fair's Mrs. Etta Terrell 1, 1320 feet southwest of Arkansas Fuel Oil Company's Terrell 1-A in the Gaffney field, perforated casing at 5460-65 feet in prepartion for production tests in what is believed to be a new pay in the Vicksburg zone. Drill-stem tests made at 5318-30 feet showed gas and a test at 5596-5605 feet, salt water.

Jim Wells County: Shell Oil Company's Wm. van Hoogenhuyze 1, wildcat 2 miles east of the Wilson field and in the southeast corner of the county, was completed for an estimated flow of 3,600,000 cubic feet of gas, about 8 barrels of condensate and 190 barrels of salt water per day through ⅜-inch choke from perforations at 9174-84 feet.

Goliad County: Seaboard Oil Company's Ferdinand Els 1, ½ mile east of Boyce field production, promises an extension of the field as preparations were reported for a completion test in the oil sand logged at 7663-71 feet. On a 25-minute drill-stem test made at 7664-71 feet, prior to setting pipe, 4960 feet of oil and an 800-foot water cushion were recovered using a ¼-inch choke.

☆ Upper Texas Coast

Midfields Area Confirmation Test Produces Large Gasser

Midfields confirmation test makes large gasser; Columbus outpost gets production from upper Wilcox; Saratoga flank test has good oil flow; Aldine field has gasser from new sand; good saturation reported in Madison County wildcat; Humble prepares to retest potential field discovery in Newton County.

Matagorda County: Sun Oil Company's R. B. Trull 1, confirmation test for the Midfields area, I&GN Survey and 2087 feet northeast of the Strnadel 2 discovery, has been completed for an open flow potential of 98 million cubic feet of gas daily from sands at 9088-97 feet. On ⅛-inch choke the well flowed 308 barrels of condensate and 3,819,000 cubic feet of gas daily with 3190 pounds tubing pressure and a gas-oil ratio of 24,000/1. Casing is sealed.

Colorado County: Texas Gulf Producing Company's Landig 1, outpost northeast of production in the Columbus field, has been gauged for production in the upper Wilcox. The well flowed 147 barrels of 38.2-gravity oil daily through 14/64-inch choke from 15 perforations at 7888-891 feet. The gas-oil ratio was estimated at 835/1 and tubing pressure was 900 pounds. Production showed 7 percent water and the operators may produce the well from this level for several days to determine if the water increases before making the dual completion, planned with the lower sand at

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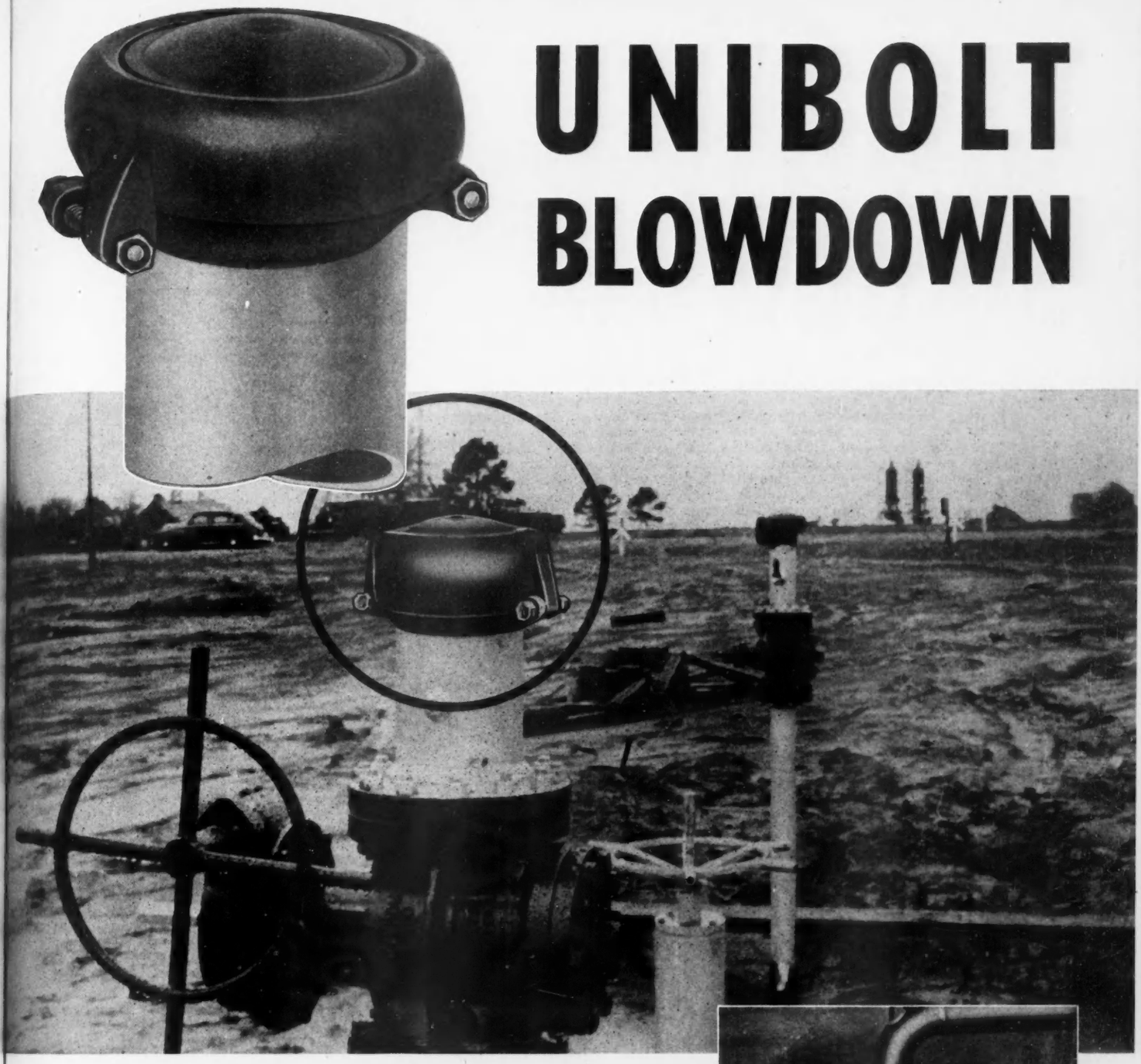

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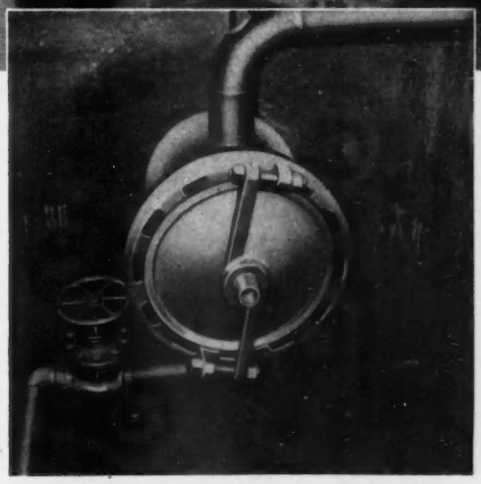

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8392-98 feet where commercial production showed on previous tests.

Hardin County: L. M. Josey et al's Caswell Trust Company 2, east flank test at the old Saratoga dome, BBB&C Survey A-311, made a good production test on the drill-stem from perforations at 5852-64 feet. During the 25-minute test, the well flowed at the rate of 120 barrels of 35-gravity oil daily through ¼-inch and ⅛-inch chokes. Tubing pressure under the test gauged 900 pounds. Total depth is 5946 feet and 5½-inch casing is set at 5945 feet. Oil sands in this well have been reported at 5761-91, 5849-65, and 5871-5926 feet.

Harris County: F. M. Corzelius' O. P. Hairgrove 1, Aldine field, has been completed in a new sand for the field for a calculated open flow gauge of 80 million cubic feet of gas daily and an ungauged amount of condensate. The pay was topped at 7525 feet and perforated with 47 shots at 7528-40 feet. Through ¼-inch choke the well flowed 3,683,000 cubic feet of gas daily, developing 2480 pounds pressure on tubing and 2680 pounds on casing. Shut-in tubing pressure gauged 2780 pounds. Total depth of the well is 7542 feet with 5½-inch pipe set at 7539 feet.

Madison County: West Production Company and Noranda Oil Company's H. M. Boring 1, wildcat test in the Amy Boatright Survey, 7½ miles southwest of Madisonville, was reported to have picked up good oil saturation near 10,500 feet, and was drilling near the contracted depth of 12,000 feet. On a 5-minute drill-stem test at 8320-50 feet, using ¼-inch choke at top and a ⅜-inch choke on bottom, the well made 1080 feet of mud with no oil indications found. It was reported to have made oil shows in both the Queen City and the Wilcox. According to the electric log, the Wilcox was topped at 1581 feet, Navarro at 6680, Pecan Gap at 7373, Austin chalk at 7984, Eagleford at 8326, and the Edwards lime at 9613.

Newton County: Humble Oil & Refining Company's W. W. Moore, Jr., 1, potential oil discovery well 2½ miles southwest of Bon Wier townsite, A. D. Stark Survey, was squeezing through 20 perforations at 9770-75 feet after plugging back to 9831 feet in preparations for another production test.

☆ South Louisiana

New Sand Pay Is Opened by Mud Lake Conformation Test

New sand pay opened by Mud Lake conformation test; Branch field has new deep gas-condensate production; Johnson's Bayou wildcat makes salt water on initial test; production string set in East Moss Lake test; Angie area wildcat shows salt water on drill-stem test; Sun to quit Singer area deep test.

Cameron Parish: Magnolia Petroleum Company's Lutcher 1-B, confirmation test 800 feet north of the number 1-A discovery well at Mud Lake, 33-14s-11w, was completed in a new, shallow sand with 48 shots at 9640-50 feet for a flow of 31 barrels of 48.3-gravity condensate and 2,983,000 cubic feet of gas daily through a 12/64-inch choke. Tubing pressures while testing gauged 3400 pounds. Initial tests at 10,721-733 feet made salt water and oil and was squeezed. The discovery well produces from 10,617-648 feet and 10,652-660 feet.

Johnson's Bayou wildcat makes salt water on initial test; production string set in East Moss Lake test; Angie area wildcat shows salt water on drill-stem test; Sun to quit Singer area deep test; Lake Salvador test sticks pipe.

Continental Oil Company and Sohio Petroleum Company's Cameron Parish School Board 1, 16-15s-14w, wildcat in the Johnson's Bayou area, has been plugged back and squeezed after making salt water on an initial production test through 48 perforations at 9196-9210 feet. The well was then perforated after the plug back in 2 sections, at 7308-12 and 7320-26 feet. Squeeze jobs were conducted in preparation for another production test in sands showing gas and condensate from 7305-7500 feet. Water sands were encountered just below sand streaks from 7320-7500 feet.

Acadia Parish: Union Sulphur Company, Inc., has opened a new deep gas-condensate producing sand at Branch with the completion of its Brunner-Bonnin 1, 60-8s-2e, at 11,808-821 feet. Production of 4.3 million cubic feet of gas and considerable amount of condensate was made through a 10/64-inch choke under 5000 pounds tubing flow pressure. Total depth is 11,919 feet with 7⅝-inch pipe set to 10,913 feet, inside of which is hung a 5-inch liner to 11,869 feet and 2½-inch tubing set to 11,769 feet.

Calcasieu Parish: Continental's Prairie Canal Company, Inc. 1, East Moss Lake test, 3-11s-9w, was reported setting 5½-inch pipe with total depth 10,490 feet. A new upper pay zone was encountered from 9991-10,031 feet, with sands showing oil from 9997-10,024 feet. Regular field pay was picked up showing oil from 10,442-474 feet.

Gulf Refining Company's Calcasieu National Bank et al 1-F, wildcat test in the Hayes field area, 17-11s-5w, was drilling below 5700 feet in shale. The well is scheduled for 13,000 feet.

Washington Parish: Humble Oil & Refining Company's Gaylord Container 1-B, wildcat in the Angie area just south of the Mississippi State line, 42-1s-14e, made a second drill-stem test from open hole at a total depth of 8133 feet, recovering 90 feet of drilling mud and 6120 feet of salt water. A previous drill-stem test from 5996-6010 feet recovered 530 feet of salt water, developing 1950 pounds working pressure. No shows of value have been reported so far in the 11,500-foot venture.

Beauregard Parish: Sun Oil Company's Rice Land & Lumber Company 1, deep wildcat test in the Singer area, 32-4s-11w, will be abandoned after having made 9 unsuccessful tests. The Wilcox was topped at 9154 feet and 7-inch casing set to bottom at 12,662 feet in preparation for a series of tests in the 9000, 11,000 and 12,000-foot levels. Of the 3 tests made below 12,000 feet, 2 made salt water and the third made a slight show of gas. Five tests made below 11,000 feet showed only small amounts of gas along with fresh and salt water. A test made at 9165-70 feet flowed fresh water, no oil or gas indications.

The Texas Company's State Lake Salvador 2-A, wildcat test in Lake Salvador on State lease 638, more than a mile east of the number 1-A well, twp 16s-22e, was reported fishing and cutting drill pipe as a result of the latter becoming stuck while drilling at a total depth of 9576 feet. The last cut was made at 8302 feet.

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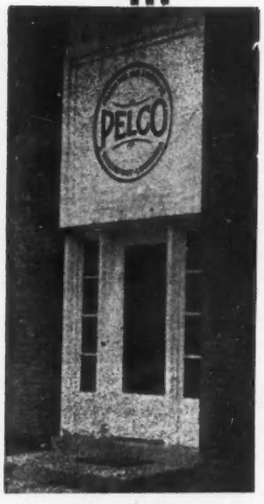

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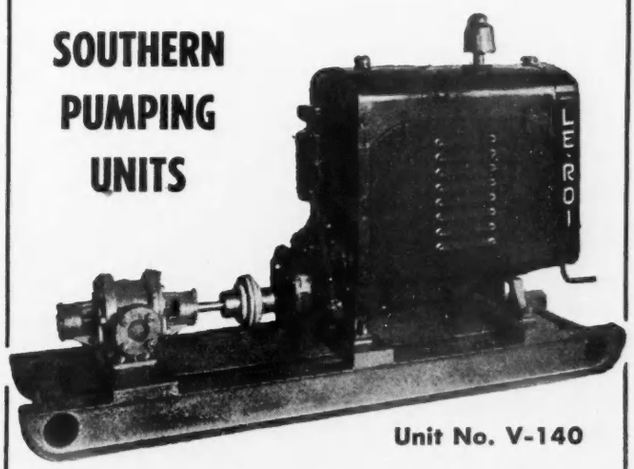

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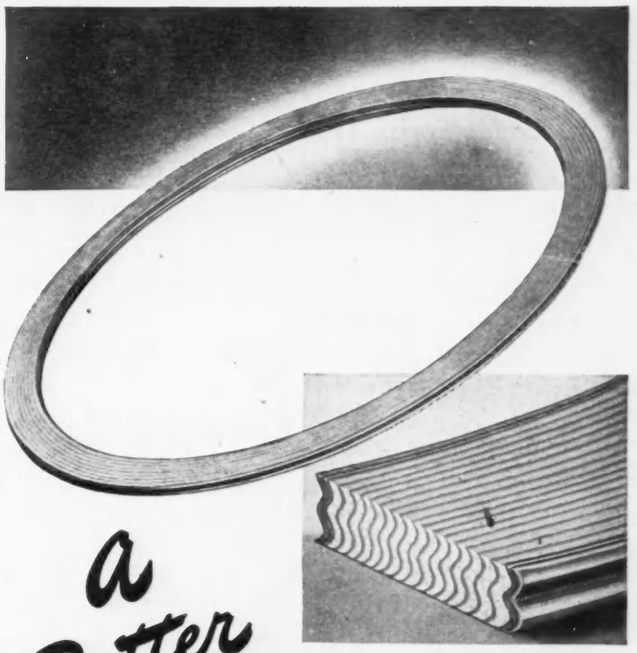

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☆ North Louisiana

Travis Peak Completion Try Set for Caddo Parish Test

Completion in Longwood area of Caddo Parish to be attempted in Travis Peak; deep test completed in Concordia; wildcats in Franklin and Richland Parishes abandoned.

Caddo Parish: Union Producing Company's Noel Estate A-1 wildcat, 11-19-16w, Longwood area, prepared to swab for completion after plugging back to 5712 feet from 9239 feet. Its completion will be attempted in the Travis Peak. Union's Fly 1, wildcat in 19-16-16w, Mooringsport area, reputedly in red shaley sand, was coring below 5925 feet.

Bossier Parish: Barnsdall Oil Company's Crystal 1, 28-21-11w, is drilling below 8216 feet after removing junked pipe. Same operator's Carter-Burton 1, 26-23-13w, Plain Dealing area wildcat, is drilling below 9487 feet.

Claiborne Parish: Union Producing Company's Meadows Unit D-1, 15-21-4w, is drilling in shale and anhydrate below 3783 feet. The Ohio Oil Company's deep test, Bond-Beene 1, 22-23-8w, was waiting on cement at 10,286 feet, after drilling to total depth of 10,781 feet.

Sabine Parish: Union Producing's Louisiana Long Leaf Lumber Company 1, wildcat in 29-8-11w, Zwolle area, was drilling shale and lime at 6528 feet.

Jackson Parish: Shell Oil Company's Tremont Lumber Company 3, 21-15-1w, was drilling shale and lime at 7232 feet.

Concordia Parish: The California Company's A. B. Learned 4, 24-9-10e, Lake St. John field, a deep test, was reported completed and awaiting gauge. Hole was bottomed at 9154 feet. Same operator's J. E. Alwood 1, 2-8-10e, with total depth 8129 feet, plugged hole at 6045 feet, sidetracked this and was reported making new hole at 7269 feet.

Richland Parish: C. G. Glasscock Company's L. & E. Hightower 1, 5-16-7e, was dry and abandoned at 4502 feet.

Franklin Parish: J. M. Hazelwood Company's Walden Baker 1, 36-16-9e, a wildcat, was abandoned at 5903 feet.

☆ Arkansas

Willisville Test May Open New Field in Nevada County

Wesson field has first duster; wildcats drilling north and east of Wesson field; test in town of Willisville offers prospect of new field in Nevada County.

Ouachita County: McAlester Fuel Oil Company's R. W. Wesson C-1, C NW SW SE 24-15-19w, Wesson field, was abandoned at 3131 feet, being the first duster recorded there.

Johnston & Owens' S. T. Tyson 1, NW SE NW 27-15-17w, west edge of the Louann pool, was completed, pumping 24 barrels of oil daily from the Meakin sand through perforations at 2328 feet, total depth 3000 feet. This was the first pumper registered in some months in the Griffin-Smackover section.

Douglas Whitaker's Bank of Stephens 1, NW NW SE 16-15-19, 1 mile north of Stephens, was dry and abandoned at 4029 feet.

Nevada County: Charles F. Steele's H. L. Waters 1, NW NE 20-14-21, in the town of Willisville, showed oil in the shallow Nacatosh sand on electrical log and has set casing at 1300 feet, total depth 2246 feet. This test, about 3 miles from the Waterloo field, offers prospect for a new field in Nevada County.

Columbia County: Skelly Oil Company's Myrtis Pipes Unit 1, 26-19-20, northeast side of the Haynesville extension, was testing and awaiting standard rig. It went to 5659 feet, and tested several times in the Pettit lime.

Drew County: C. A. Kinard's McCauley 1 wildcat, C NE SW 14-12-6w, was below 2500 feet. A. L. Cochran received permit for John A. Cooper 1, C NW NE 7-11-4w, 4½ miles west of Winchester.

Prairie County: M. W. Martin, J. R. Coker and R. M. DeWitt were shut down at 2930 feet in W. H. Stewart 1, NWc 3-3-5w, repairing pump and waiting for drill stem.

North Carolina Test to Be Abandoned, Another Planned

Standard Oil Company of New Jersey is preparing to abandon its first deep test at Cape Hatteras, N. C., but will continue exploratory work in the area. Two distinctly separate sand bodies, both of which are productive in the Gulf Coast regions, were found to be well developed in the company's Esso 1.

The first favorable sand body was the Black Creek sand, picked up at 3664 feet and found to be 639 feet thick, although no showings of oil or gas were present in this location. Massive Tuscaloosa sand was topped at 6447 feet, and was the primary objective. It was in sand at total depth of 6512 feet, but no showings were present. A drill-stem test was made at bottom before deciding to abandon, but only salt water was recovered with no evidence of oil or gas.

The company holds leases from the state of North Carolina on approximately 1,400,000 acres, in addition to property leased from private owners in the area. With information available through drilling of this well, and a program of additional geophysical work to start right away, the company hopes to get interpretations pointing to possible structural conditions for location of the next wildcat test. It is possible that the next test will be a marine operation drilled in the waters of Pamlico Sound, and it is here that some of the new ghophysical work will be carried out.

Short-Term Courses Planned In June by Tulsa University

Two short-term courses—one in gas appliances and the other in liquefied petroleum gas appliances—will be offered by the University of Tulsa College of Petroleum Sciences and Engineering. The gas appliances course will meet four days, June 11-14, and the other course, June 18-21.

The gas appliance course will cover combustion principles, burner design and operation, installation of vents and flues, space heater installation, floor furnace installation, circulating heating systems and temperature control equipment. The LPG appliance course will cover properties of LPG, LPG transportation and storage, cyinder testing, safety precautions, burner design and valves and regulators.

☆ Mississippi

Adams Potential Commercial Producer Makes No Progress

Potential commercial producer in Adams County fails to make progress; 5 development wells completed.

Adams County: Phillips Petroleum Company's Davey 1, 46-8n-2w, continues to meet with discouragement in its efforts to make a commercial producer. Well is producing small amounts of gas and oil intermittently from perforations at 10,030-45 feet, and preparations are being made to test a new section immediately below at 10,060-70 feet.

Yazoo County: Union Producing Company's Jennie Stevens 22, SWc 1-10n-3w, Tinsley field, is presently developing production from the Lammons sand zone below 5200 feet. A drill-stem test at 5280-88 feet recovered 90 feet of oil cut with gas and mud. Cores from 5330-40 feet showed a 9-foot stratum of oil sand and a drill-stem test was run. Plains Production Company's E. W. Milner 5, NEc NW SW 7-10n-2w, Tinsley, has set casing and was preparing to run test after bottoming at 5475 feet. A drill-stem test at 5389-5415 feet recovered 800 feet of oil and mud. Development of previously unexploited oil levels shows promise of increasing production in the field, which has been dwindling steadily during the past year. Southern Natural Gas Company is rigging up for Gammill Investment 2, SE SW NE 6-9n-4w, which is reported due to go below 5800 feet. Gammill Investment 1 was abandoned as a duster last year without shows.

Wilkinson County: Danciger Oil & Refining Company's George W. Armstrong 1, 5-4n-2w, is drilling below 8851 feet with no encouragement noted. Slight shows of gas were reported in cores taken at 6608 feet, but no commercial potential was indicated.

Wayne County: Humble Oil & Refining Company's Masonite B-1, SWc 21-9n-7w, wildcat, is drilling below 7400 feet with no shows indicated at any point.

Lamar County: Gulf Refining Company's J. M. Andrews 3, SWc 6-1n-16w, Baxterville field, has been successfully completed with an initial production rate of 720 barrels a day through ¼-inch choke. Basal Tuscaloosa section was perforated at 8642-56 and 8670-8720 feet to establish production. Gulf's W. E. Davis 3, NWc SW NW 7-1n-16w, Baxterville, is running additional core tests after encountering a good section of saturated sand in the Massive zone below 8800 feet. The Superior Oil Company's R. Batson 7, 17-1n-16w, Baxterville, is drilling below 7752 feet with no shows reported.

Lincoln County: The Brookhaven field has become active after almost a year of relative quiet. Four tests are now drilling with 3 about ready to enter the producing zone. Roeser & Pendleton's School Land 1, NW NW 16-7n-7e, is working below 9291 feet after topping chalk at 8260 feet. The California Company's J. B. Arrington 1, NEc 32-8n-7e is drilling below 8659 feet with no shows noted, while The California Company's Ras Smith 1, NEc 8-7n-7e, is drilling below 8853 feet. Roeser & Pendleton's W. Lonnie Case, NE SE 8-7n-7e, is be-

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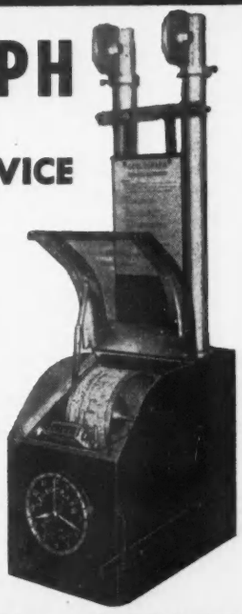

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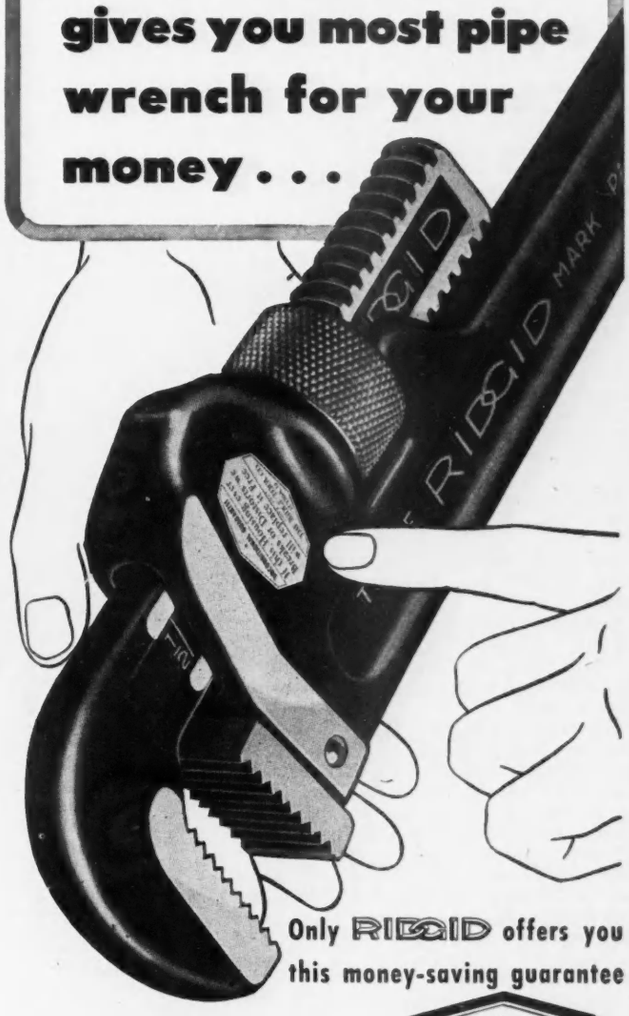

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low 2800 feet in its drive for the 10,000-foot zone.

Jefferson County: Humble's J. Fred Gordon 1, NEc 25-9n-1w, Fayette field, is having trouble developing production after a drill-stem test of the Massive sand at 9685-90 feet recovered only mud with no shows. Same section was previously swabbed down but only small shows of oil and gas were recovered. Driller is preparing to reperforate at 9678-85 feet.

Jeff Davis County: Gulf Refining Company's M. W. Berry 1, NWc SE NW 13-9n-19w, Gwinville field, has been completed as a gas-condensate well. Several sections of the Eutaw and Tuscaloosa horizons were perforated below 7880 feet and well flowed at a rate of 25 barrels of condensate and 3,936,000 cubic feet of gas per day on initial production test.

Florida

O. D. Robinson's State Well 1, NEc NW 29-59s-40e, Monroe County deep test which has been watched closely because of previously reported shows of oil, indicated additional slight shows in cores from 10,734-45 feet. The well is now shut down for repairs at 10,745 feet. Gulf Refining Company's State 1, SWc 2-67s-29e, wildcat, is held up in fishing operation with hole bottomed at 5530 feet.

Hillsborough County: Humble Oil & Refining Company's T. S. Jameson 1, NE NE 7-31s-22e, wildcat, is drilling below 6253 feet with no shows. Cores from 5915-25 feet recovered lime and shale.

Osceola County: Humble's Carroll 1, SE SE 10-27s-34e, wildcat, is reaming out hole after reaching a total depth of 1848 feet. Cores from 1503-05 recovered porous lime.

Hernando County: The Ohio Oil Company's Hernasco Corp. 1, NWc 19-23s-18e, wildcat, is running core tests below 5784 feet in dolomite and lime. Very slight shows were reported in cores from 5584-56 feet, but a drill-stem test failed to exploit them.

Collier County: Humble's Gulf Coast Realty Company 6, SW NE 19-48s-30e, Sunniland field, is shut down for repairs after reaching 11,397 feet. Only shows of oil reported so far have been in cores from 9740-9841 feet.

Alabama

The Carter Oil Company's Rex Alman Unit 1, SW SE NE 4-10n-3w, East Gilbertown field, Choctaw County, is getting ready to swab well in after setting casing to 3265 feet. Well will be brought in from the Eutaw horizon below 3152 feet.

Mobile County: Mikton Oil Company's Mike Vergos 1, C SE NW 21-3s-2w, deep test, is drilling below 6995 feet with no shows. Cores from below 6900 feet recovered sandy shale and sand.

Conservation Group Formed

Determined to keep the issue of permanent price differential for stripper well output in the front of legislators and the public, oil and royalty owners met with Chamber of Commerce representatives in Tulsa to organize a permanent national oil conservation committee. John G. Catlett, Tulsa oil producer and royalty dealer, was named general chairman of the group and Ernest Shamblin, independent oil operator of Bristow, Okla., was made executive manager.

Kentucky's Clinton County Field Now Has 10 Producers

Kentucky's newest oil field, located 6 miles northwest of Albany, in Clinton County, now has 10 producing wells, 7 wells drilling, and 12 new locations. The first commercial well, drilled by Clarence Juist et al, was Ora Hay 1, which started flowing when drilled 2 feet into pay at 1057 feet. The well then caught fire and when extinguished 3 days later the rate of flow was 80 barrels per hour. The lack of pipe line facilities has slowed development but drilling is increasing with the movement of oil.

One-half mile south of the discovery, I. J. Vawter drilled Roscoe Tuggle 1 and at the depth of 710 feet Upper Sunnybrook came in at 42 barrels per hour. A north and a west offset to this well made about the same production. Then E. R. Morris of Sault Ste. Marie, Mich., drilled 3 wells just east of Tuggle 1 to the Lower Sunnybrook formation, 858 to 870 feet, and these wells came in at an average of 80 barrels per hour. This formation is proving to contain more persistent production than that in the Upper Sunnybrook wells, which will be deepened to this pay.

The Clarance Juist discovery well was brought in September 20, and still pumps and flows 220 to 230 barrels in 24 hours. The west offset to the discovery has not been fully developed for lack of an outlet for oil.

The last well brought in is Lyman Siler's F. B. Hay 1, a location north and 3 east of the discovery. The well is pumping 10 to 12 barrels per hour.

On a separate structure about 2 miles northeast of this field, Clarance Juist and associates have brought in a well at total depth of 1427 feet. The upper formations, as in the first field, did not produce, but 4 pay zones were found in the Ordovician, from 1317 to 1427 feet, where drilling stopped at 2 feet in the pay. Oil came up 1350 feet in the hole and a full test will be made when a pipe line is available.

The gravity of the oil in this district is 42.4. The South Kentucky Pipeline Company of Somerset is purchasing the oil, hauling it in tank trucks and arranging for a pipe line to the field.

Information on the discovery is as follows: Well started in the Warsaw formation, which is the Lower Mississippian. Chattanooga shale, 392 feet, thickness 30 feet. This is the base of the mississippian. No Devonian or Silurian. Base of the Trenton, 1000 feet. Pay, in the Ordovician, 57 feet below the base of the Trenton. Upper and Lower Sunnybrook are of Trenton age.

Plans Disclosed for Three Wildcat Tests in Arizona

Plans for drilling three wildcat tests in Arizona have been revealed by O. C. Williams, Arizona State Land Commissioner.

The tests will be drilled by J. R. McGill, Amarillo contractor, for John Robertson and Associates. The first of the tests will be drilled southwest of Wittman, in the vicinity of a small well Robertson has been working on for some time.

"This looks to me like the start of a real campaign of drilling exploration for oil in Arizona," Williams said. "I am not able to disclose the names of other companies that will soon follow McGill into this field, but I can state positively that other substantial outfits are getting ready to drill in Arizona."

Lahee Succeeds Pew as Head Of API Reserves Committee

Resignation of J. Edgar Pew, Sun Oil Company, Philadelphia, as chairman of API's committee on petroleum reserves was announced "with deep regret" last week by President William R. Boyd, Jr. Dr. Frederic H. Lahee, Dallas, chief geologist for Sun, will succeed Pew in the chairmanship.

Pew has been chairman of the committee since its inception in the fall of 1936, when it was formed to survey annually the nation's proved petroleum reserves. The report has been issued annually since January 1, 1937. Lahee has been a member of the committee since its inception and was the unanimous choice of the committee, Boyd disclosed.

Paul Montgomery Named Acting State Geologist

Louisiana Conservation Commissioner Joseph L. McHugh has appointed Paul Montgomery as acting State Geologist effective April 15 with the resignation of Dr. John Huner to enter private consultation work. Montgomery, a native of Baton Rouge, has been granted a leave of absence from his work as gas engineer under P. A. Frye, State Director of Natural Gas Conservation. He obtained a degree in petroleum engineering from Louisiana State University in 1938, majoring in geology, after working in the office of the state geologist as a laboratory assistant in 1937-38.

Hughes Tool Signs with CIO at Houston Plant

Executives of Hughes Tool Company and union officials signed a contract April 8 to end a 77-day walkout of 3000 CIO steelworkers at the Houston plant.

Terms of the settlement include an immediate 17-cent hourly wage increase in all job classifications; agreement to hold a new NLRB bargaining rights election within six months; elimination of intra-plant job inequities following a joint study by union and management "and such further wage adjustments as will be necessary to cure such inequalities"; and a one-cent hourly increase in shift differentials.

The Hughes walkout began January 21, at which time 11 other Houston steel plants were affected by the nationwide steelworkers' strike. Initially, more than 4000 workers were on strike, but company officials said only 1000 were on strike and that production has been almost normal since a few weeks after the strike began.

Plant in Operation

The West Pampa Repressuring Association has begun operating its repressuring plant in the West Pampa field in the Gray County sector of the Texas Panhandle. The project involves the return of gas to the oil zones in 16 sections of leases, and the initial runs applies to 50 key wells. Major and independent companies subscribed the necessary funds to erect and operate the plant.

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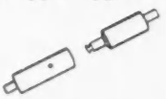

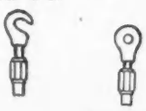

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☆ Michigan

Sherman Pool Outpost Flows After Plug-Back to Traverse

Chartiers Oil Company's Diehl 1, N½ SW NW 29-15n-6w, outpost a mile northwest of the old Sherman pool, Isabella County, flowed 63 barrels net the first 24 hours on test after plug back from 3779 to 3300 feet and 1000 gallons of acid. The well flowed 45 barrels the second day. It is also making an estimated 900,000 cubic feet of gas.

Pay is in the Traverse lime, topped at 3190 and originally drilled to 3310, where it showed water formation.

Kent County: James J. McGerry's Williams 1, NE NE SW 36-9n-11w, a mile south of the Rockford pool, pumped and flowed 40 barrels after acid treatment in Traverse lime pay at 2207-14 feet and looms as an important extension development for the pool. Four new locations have been made as a result of the extension.

Saginaw County: Rowmor Oil Company's Bork 1, NW SE NW 3-11n-2e, wildcat 12 miles southeast of Porter field, was shut down for orders at 3155 feet after drilling water formation at 3150-55 feet. Dundee, logged at 3101 feet and cased at 3127 feet, showed 1200 feet of oil and a trace of water at 3128-29 feet. No increase in oil was reported to the present shutdown depth.

Will I. Lewis Named Head of Illinois Oil, Gas Association

Will I. Lewis, independent operator of Mt. Vernon, was named president at the first annual meeting of the Illinois Oil and Gas Association at Mt. Vernon.

C. C. Carroll was named first vice president, Walter Duncan, Sr., second vice president; Basil Moss, treasurer, and R. B. Kelly, secretary.

Russell W. Brown, chief counsel of the Independent Petroleum Association of America, reviewed the effort to remove OPA regulations over petroleum and petroleum products.

☆ California

Production Tests Scheduled For East Los Angeles Outpost

Tests to be made in East Los Angeles outpost; new producer in Huntington Beach area; Superior drills 11,562-footer at Paloma in 57 days; second well brought in for Temblor area; Dunnigan Hills gas test fails to find sand.

Los Angeles County: Production tests were slated in Chanslor-Canfield Midway Oil Company's Bandini 1, wildcat in the East Los Angeles area, 21-2s-12w. Total depth is 10,058 feet with 9⅝-inch casing cemented at 9938 feet. Casing was cemented in 4 stages.

Eastward in Sect. 23, Shell Oil Company is rigging up to deepen Pansini 1, acquired last fall from C. G. Willis, who drilled it to 8195 feet. Outcome of these 2 wells will help determine the importance of Richfield Oil Corporation's recent discovery in this area. Richfield has 2 producers to date, the discovery well, Union Pacific Unit 1, in Sect. 9 and Vail 1 in Sect. 16.

General Petroleum Corporation's deep test in the Wilmington field, Harbor Community 29, was coring at 5935 feet in shale and oil sand. One core was reported as showing very good-looking oil sand. Hancock Oil Company's deep test in the same field, A-1, with total depth 5950 feet, was preparing to run casing.

The Ohio Oil Company's Gardena wildcat, Gardena Community 4-1, total depth 10,067 feet, was fishing for electric log device and part of the cable.

Orange County: Hiawatha Exploration Company's Atha 1, 13-6s-11w, Huntington Beach area, is pumping 150 barrels of 22.8-gravity oil cutting 4 percent mud. Production is from the perforated interval 2760-80, 2905-30, 2983-3008 and 3035-45 feet. A second well will be drilled 265 feet southeast and operator indicates he will drill a total of 10 wells in this area.

Kern County: The Superior Oil Company's Anderson 58-35, Paloma field, was drilled to 11,562 feet in 57 days. It was completed without swabbing, flowing 650 barrels of 35.4-gravity oil through a 15/64-inch choke.

In the same field, General Petroleum's north flank outpost, Benco 76-28 in 28-31s-26e, cored oil sand and was trying to run electric log. Total depth is 11,550 feet, with top of the Paloma sand placed at 11,275 feet.

Efforts continue to develop production in the Dyer Creek area. Jergins Oil Company has abandoned Dyer Creek 48 in 9-26s-27e at 3250 feet, but The Texas Company has staked a location for Cairns 1 in Sect. 14.

Hard luck continues to beset Seaboard Oil Company et al in the Buena Vista Lake deep test, BVA 73-14, 14-32s-25e. After completion of a fishing job the hole was lost around 3850 feet. New hole was drilled to 4178 feet and attempts are now being made to get back into the old hole, bottomed at 11,495 feet.

Independent Exploration Company's Temblor 3 in 17-29s-21e, second well in a new producing area recently discovered by this operator, has been brought in flowing 600 barrels of 19-gravity oil through a 20/64-inch choke. Total depth is 2826 feet.

Yolo County: Standard Oil Company of California failed to pick up the gas sand discovered recently by The Texas Company in the Dunnigan Hills area and its widcat, Laugenour 1 in 15-11n-1w, has been abandoned at 2800 feet. Standard is rigging up for a second test of the area. Du Bois 1 in 28-11n-1w will be drilled for Standard's subsidiary, Natural Gas Corporation.

Fresno County: Bolsa Chica Oil Corporation, which recently acquired 4 separate parcels in the 4 corners of 36-21-15 in the Jacalitos area is planning a test well in the northwest quarter of the section. West of the Jacalitos field, Standard has staked Pauson 41, wildcat in 28-21s-15e.

Solano County: Amerada Petroleum Corporation has completed Millar Community 2 in the Dixon gas area, 2-6n-2e. Well flowed an unestimated volume through gun perforations at 4595-4626 feet. Total depth is 4630 feet. Shut in pressures are 1040 pounds on the tubing and 1050 pounds on the casing.

Santa Barbara County: General Petroleum has remedied most of its water trouble in Jand 1, northerly edge well in the Santa Maria field, by running tubing with a packer. Well is now making 126 barrels net, 10 percent cut. A leak in the casing is suspected. Operator has staked Jand 2 nearby.

☆ Canada

Phillips Adds 175,951 Acres To Alberta Foothills Holdings

Phillips Petroleum Company has added another 175,951 acres to its holdings in the Alberta Foothills Belt, raising to 3 the number of areas in this province reserved by that company. The new holding extends east from the Narraway River, in the Northern Foothills, tying on to the southeast of Phillips' 27,856-acre Two Lakes Anticline Reservation acquired last August, and about 20 miles northwest of the big Smoky River Reservation, taken up in January by a syndicate of 5 other major concerns. The new holdings extend from Twp. 61 to 63, Rges. 10 to 13w6.

Phillips, now in its third year of large scale geological work in the North Alberta Foothills-Peace River block (British Columbia) area, will carry out detailed work on the new holding this summer. The company is currently drilling its second Foothills wildcat, in the Sullivan Creek area, southwest of Turner Valley.

Three leading Alberta independents have joined forces for development of 6 large lease and reservation blocks in Alberta totalling 1,131,497 acres. The partners are Anglo Canadian Oil Company, Ltd., Home Oil Company, Ltd., and the Calgary & Edmonton Corporation.

The oil and gas exploration program—largest yet announced this year by independents—will involve spending of $250,000 this year, and as much or more in 1947. This year's portion will include geological and geophysical work on the six blocks, plus drilling of 5 or 6 wildcats. Geological work is now under way and the initial well will start probably early in June.

Four of the blocks are on the Central Plains between Edmonton and the Saskatchewan boundary, in the area which yielded the huge Viking-Kinsella gas reserve and the Vermilion, Wainwright and Lloydminster heavy crude fields. A fifth is on the Plains west of Edmonton, overlying the east limb of the Alberta syncline. The sixth is on the Northwestern Alberta Plains, north of Peace River.

The blocks are West Viking, 188,542 acres, Twp. 44 Rges. 15 and 16w-4 to Twp. 49 Rge. 17w4; Beaverhille Lake, 146,151 acres, Twp, 50 Rges. 16 and 17w4 to Twp. 53 Rges. 17 and 18w4; Fort Augustus, 51,736 acres, Twp. 54 Rges. 21 to 23w4 and Twp. 55 Rges 21 and 22w4; Elk Point, 83,994 acres, Twp. 55 Rge. 4w4 to Twp. 57 Rge. 4 to 6w4; Wabamun Lake, 179,160 acres, Twps. 50 to 52 Rges. 3 to 6w5; Notikewin River, 481,914 acres, Twps. 90 to 95, Rges. 20 to 23w5.

Home-Brazeau Syndicate 1, Central Alberta Foothills wildcat in lsd 5 17-43-17w5, was yielding 6130 mcf of gas daily on April 8, with a separator recovery of three barrels daily of 50.2-gravity distillate, flowing with 875 pounds on tubing, 990 pounds on casing and 200 pounds on separator. The well is testing 15 feet of slight porosity in the Madison limestone between 9523-9597 feet. Prior to acidizing with 4000 gallons, this section yielded 800 mcf of gas daily, climbing to a flush of 10,500 mcf against 310 pounds on tubing, 660 pounds on casing, after acid.

EXPLORATORY COMPLETIONS

CALIFORNIA WILDCATS

Kern County—Failures: General Petroleum's Kernway 3-6, 6-29s-27e, Saco area, Base Stevens 5965 ft, Rio Bravo 8402, Vedder 8505, abnd 8522.

Edward Gieck's Woodworth 1, 30-31s-30e, S. E. Edison area, Basal Sand 4787 ft, Schist 4885, top hard Schist 5005, abnd 5185.

Jergins Oil's Dyer Creek 48, 9-26s-27e, Dyer Creek area, Olcese 2195 ft, McVan 3142, Vedder 3199, abnd 3249.

Yolo County—Failure: Standard Oil's Laugenour 1, 15-11n-1w, Dunnigan Hills area, abnd 2800.

Fresno County—Failure: Norris Stamping & Mfg. Co.'s Cross 1, 36-16s-16e, Helm area, Kreyenhagen 7963 ft, Domengine 8557, Hondo Shale 8569, abnd 8729.

Ventura County — Failure: Wilshire Oil's N.L.&F. 1, 2-3n-18w, Tapo Canyon area, abnd 5798.

COLORADO WILDCATS

Pueblo County—Failure: Colorado Petroleum's wildcat, nw se 17-17s-64w, Sullivan Park area, abnd 2900.

FLORIDA WILDCAT

Gilchrist County—Failure: Sun's Alto Adams 1, swc 15-9s-15e, abnd 3753.

ILLINOIS WILDCATS

Clinton County—Failure: C. R. Winn et al's Treffert 1, nw nw nw 15-2n-1w, abnd 1499.

Cumberland County—Failure: Everett Connelly's Carroll 1, ne se ne 24-10n-9e, abnd 2500.

Macoupin County — Failure: J. Q. Gill's Parker 1, ne ne ne 21-10n-9w, abnd 612.

Marion County—Failure: J. T. Crowder's Hotka 1, nw sw nw 34-4n-2e, abnd 2341.

St. Clair County—Failure: T. R. Kerwin et al's Schorf 1, nw se ne 4-1s-9w, abnd 1250.

Washington County—Failure: W. F. Lacy's Rankensmeyer 1, sw se ne 10-1s-2w, abnd 1404.

INDIANA WILDCATS

Gibson County—Discovery: L. A. Plumb et al's Coleman 1, sw sw nw 7-2s-9w, pumped 25 bbls oil day, Rosi 1791-1804, td 1969 ft.

Posey County—Discovery: R. E. Johnston et al's Barrett 1, sw ne ne 27-5s-14w, pumped 9 bbls oil day, Hards sd 2369-78 ft, td 2381.

Posey County—Failure: Ward & Larson's Eickhoff-Wolfe 1, sw ne sw 22-6s-12w, abnd 2734 ft.

KANSAS WILDCATS

Barber County—Gas Discovery: Continental's Skinner 1, se se ne 33-31s-15w, 2,500,000 cu ft gas, Mississippi lime 4698-4720 ft, td 5167.

Phillips County — Failure: Helmerich & Payne's Baird 1, ne ne ne 8-4s-19w, abnd 3965.

Rooks County—Failure: Tom Palmer's Henderson 1, ne ne ne 34-7s-19w, abnd 3342.

Rooks County — Oil Discoveries: Bird and Boreing et al's Veverka Estate 1, C s/2 sw sw 27-8s-19w, pumped 2549 bbls oil per day, Arbuckle 3403-09 ft, td 3409.

Atlantic's Carmichael 1, se se ne 16-9s-17w, pump 35 bbls oil per day, Arbuckle 3429-35 ft, td 3547.

KENTUCKY WILDCATS

Henderson County—Failure: Q. B. Mitchell's Thornsberry 1, sw se se 5-N-23, abnd 2785.

Delta Drlg et al's Boswell 1, sw ne sw 7-P-26, abnd 2332.

Ohio County—Failure: J. F. Minuette et al's Ashly 1, ne nw sw 1-L-31, abnd 1180.

NORTH LOUISIANA WILDCATS

Franklin Parish—Failures: C. L. Smith's A. C. Polk Est. 1, c nw se 27-14n-7e, Wilcox 1890 ft, Midway 3446, gas rock 3940, Tuscaloosa 4642, L. Cret. 5416, abnd 5788.

Big Chief's J. S. Ames 1, c ne nw 2-16n-9e, abnd in Tuscaloosa 3516.

J. M. Hazelwood's Walden Baker 1, 36-16n-9e, sso 5161-67, abnd 5305.

SOUTH LOUISIANA WILDCATS

Assumption Parish — Failure: Continental's Whitecastle Lbr. & Shingle Co. 1, 28-12s-13e, 1 mi n Napoleonville prod, abnd 12,061.

Beauregard Parish—Failure: Sun's Rice Ld. Lbr. Co. 1, 32-4s-11w, Singer area, Wilcox 9154, abnd 10,662.

Iberia Parish—Failure: Continental's Willie S. Patout et al 1, 8-13s-7e, Grand Marais Prospect, abnd 12,982.

St. Charles Parish—Failure: Union of Calif.'s Milliken & Farwell 2, 26-12s-2e, Hahnville area, abnd 9934.

St. Martin Parish — Failure: Continental's Marcelite G. Fournet 1, 113-10s-6e, 6700 n of St. Martinville prod, abnd 12,375.

SOUTH LOUISIANA NEW PAY TESTS

Acadia Parish—Distillate Discovery: Union Sulphur's Bruner-Bonin 1, 60-8s-2e, pay 11,808, perf 53 shots 11,808-821, flow 4,300,000 gas some cond 10/64-in, tp 5000 lbs, td 11,919.

Cameron Parish—Distillate Discovery: Magnoglia's Lutcher 1-B, 800 n Disc well 1-A, 33-14s-11w, pay 9636-58, perf 48 shots 9640-50, flow 31 bbls 48.3-gr, 2,983,000 gas, 12/64-in, gor 96,217/1 td, 10,825.

St. Landry Parish—Gas Discovery: Sun's L. A. Guidry 1 13-8s-3e, pay 10,193, perf 12 shots 10,221-224, flow gas, no gge, td 10,550.

MICHIGAN WILDCATS

Arenac County—Failure: Ward Oil's Petty 1, sw sw nw 18-19n-7e, Dundee 2828 ft, abnd 4170.

Barry County—Failure: Oil Producers, Inc.'s Bowerman 1, ne nw se 1-3n-10w, abnd 2141.

Kalamazoo County—Failure: W. D. Gannett's Meyers 1, ne ne ne 31-1s-12w, abnd 1306.

Mecosta County—Failure: Mich. Consolidated Gas Co.'s Rogers 1, c se 2-13n-9w, abnd 1365.

Ottawa County—Failure: E. J. Bouwsma's Host 1, ne nw ne 32-8n-13w, abnd 2512.

MICHIGAN OUTPOST COMPLETION

Kent County—Oil Discovery: James J. McGerry's Williams 1, ne ne sw 36-9n-11w, Traverse 2207 ft, pump & flow 40 bbls oil after acid, td 2214.

NEW MEXICO WILDCAT

Roosevelt County—Failure: Southern Union Gas' Lucas 1, c se sw 5-2n-30e, elev 4279 ft, Abo 4640, Pennsylvanian 5950, granite 7146, abnd 7155.

OKLAHOMA WILDCATS

Garfield County—Failure: Stephens Pet Co.'s Kaiser 1, sw sw nw 7-20n-3w, td 6710.

Garvin County — Discovery: Sohio's Tolbert 1, ne nw ne 9-3n-1w, 5,250,000 cu ft gas, perf 4535-40 ft in bromide sand, td 4587.

Hughes County—Discovery: Skelly Oil's Price 1, sw ne ne 26-8n-10e, 10,234,000 cu ft gas, Cromwell 3330-3420, td 3464.

McIntosh County—Failure: Leonard Chudacoff's Tabor 1, ne sw se 11-11n-16e, abnd 3209.

Okfuskee County — Failure: Johnson Gill's Scott 1, sw sw se 34-10n-10e, abnd 3390.

Pottawatomie County—Failure: R. U. Porter's King 1, se sw sw 2-11n-6e, abnd 4572.

Tillman County—Failure: T. H. McCasland et al's Mounts 1, se se ne 18-2s-16w, abnd 3704.

WEST TEXAS WILDCAT

Pecos County—Oil Discovery: Wm. Y. Penn et al's Seharer 1, 330 ft out west corner n¼ H&GN Ry, 41, blk 10, elev 2406 ft, flowed 36 bbls 35.5-gr, gor 1994/1, 24/64-inch, shot 50 qts nitro 1940-60 ft, td 1964.

Tom Green County—Failure: Harley Sadler et al's Mims 2-80, 2640 ft snl & 2100 ft wel of H&TC Ry. 80, blk 6, elev 2319 ft, abnd 760.

TEXAS PANHANDLE WILDCATS

Hartley County—Failures: Pure's Robinson 1, ne nw nw H&TC Ry. 152, blk 48, elev 3922 ft, abnd 3921.

Stanolind's Beck 1, c nw ne sec 20, blk 15, Capitol Syndicate Lands, League 164, elev 4256 ft, top granite 5955, abnd 5959.

WEST CENTRAL TEXAS WILDCATS

Eastland County—Failure: J. W. Sewell et al's Buchanan 1, 750 ft out of NEc sw E. T. Ry. 25, blk 2, abnd 1150.

Jones County—Failures: J. D. Andrews et al's Steele 1, 2075 ft nsl and 7320 ft wel league 334, Harrison CSL sur, elev 1763 ft, abnd 3070.

West-Honea-Hines & Hilburn's Owens 1, nw nw ne BBB&C Ry. 3, blk 4, elev 1580 ft, base Upper Hope 2160 ft, abnd 3518.

Parker County—Failure: Continental's Woody 1, 660 ft out of m/s/nw corner of D. A. Deal sur A-2104, elev 1342 ft, Ellenburger 6110 ft, abnd 6547.

Runnels County—Oil Discovery: F. A. Gillespie Sons & Co.'s Wilke 1, 5101 ft wel and 331 ft nsl Day Land & Cattle Co. sur, elev 1810 ft, pump 19 bbls 40-gr. plus 25% water, acidized 4000 gals Canyon 2490-2500.

Shackelford County—Failures: R. S. Miesse et al's Elliott 1, 1110 ft snl and 1590 ft ewl of nw¼ sec 46, Bayland Orphan Home sur, abnd 754.

Harold G. Neely & Lemon Neely's Carlisle 1, 330 ft out SWc W. S. Pope sur 6, elev 1605 ft, Sedwick 1135, Dothan 1305, abnd 1851.

NORTH TEXAS WILDCATS

Archer County—Failures: Cochran & Cain's Seay 1, 750 ft out NWc blk 69, J. W. Harris subdiv, abnd 1410.

C. W. & W. L. Snoddy's L. F. Wilson 1, sw sw ne sec 63, ATNCL sur, elev 996 ft, Bend 5212 ft, abnd 5248.

Young-Kelleher & Timberlake's Powell 1, 1065 ft e and 150 ft n of SEc blk 141, J. W. Harris subdiv, but in Rachel Storey sur A-373, abnd 1340.

Jack County—Failure: Hanlon & Buchanan's Crowley 2-E, 620 ft snl and 233 ft wel S.P. Ry. 1, A-579, abnd 608.

King County—Failure: Superior's Pitchfork 2, sw sw se sec 171, J. H. Gibson sur, elev 2024 ft, Mississippi 6405, Cambrian 6970, granite 7043, abnd 7045½.

Wichita County—Failure: Ted A. Norwood's Spradling 1, 1340 ft snl and 1546 ft wel blk 306, Waggoner Colony Lands, abnd 1750.

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EAST TEXAS WILDCAT

Limestone County—Failure: Nu-Enamel Oil's Erskine 1, 100 ft from sw and 3150 ft from se lines C. A. Ogsberry sur, 4 mi s Big Horn, elev 478 ft, Pecan 1700-1980, Austin 2190-2445, Buda 2870-2910, Georgetown 3030, Edwards 3310, Goodland 3605, Glen Rose 3895, massive anhydrite 4610-4655, Rodessa 4879, Pettit 5165, Travis Peak 5335, Cotton Valley 6560, abnd in lime 7851.

SOUTH CENTRAL TEXAS WILDCAT

Lee County—Failure: Humble's Geo. Vick et al 1, 300-ac lease, Bethel Smith sur, flowed oil and gas 6060-75, abnd 8855.

SOUTHWEST TEXAS WILDCATS

Webb County—Failures: Texas Co.'s M. B. de Spain 1, 990 fr el 2310 fr sl CCSD&RGNG sur 12 and 640-ac lse, 5 mi nw Carolina-Texas fld, abnd 2113.

Texas' Griffin Watkins Est. 1, 1650 fr nl 990 fr el 1650 fr wl se¼ blk 20, De Lange Eiser Dev. Co. sbdn 509-ac lse, San Casimiro y de Las Fuentes sur, abnd 1405.

Zapata County — Failure: Harvey Mecom's Calixto Gutierrez et al 1, 4563-ac lse, Porc 1, 5 mi ne Zapata, abnd 2500.

LOWER TEXAS COAST WILDCAT

Nueces County—Failure: Mosser, Anderson & Kirkwood's H. V. Fuchs 1, 660 fr nw&wl 110-ac lse F. Z. Bishop sbdn Palo Alto Gr sect 178, 4 mi e Stratton fld, abnd 8015.

UPPER TEXAS COAST WILDCATS

Chambers County—Failure: Windsor Oil Co.'s E. W. Boyt 1, 660 fr s&el sect 25 160-ac lse, T&NO sur, 2½ mi w Sun's Moore 1 disc for Double Gum fld, abnd 5516.

Harris County—Failures: Jack W. Frazier's Kalb & Dumas 1, nwc Harris & Carpenter sur, 3350 n 330 ely at ra on 102.23-ac lse, P. J. Duncan sur, abnd 7780.

Hinkle Drlg. Co.'s Mrs. Minnie H. Allen 1, 660 fr nl 330 fr wl 80-ac tr, Blas Herrera sur, lot 31, abnd 8223.

UPPER TEXAS COAST NEW PAY TESTS

Brazoria County—Gas Discovery: McCarthy O&G Corp.'s Frank A. Stevens et al 2, 330 s 1557 fr wl 208-ac lse, Geo. Robinson Lge, "T" sand new pay 9028-40, perf 36 shots 9028-40, flow 4,510,000 gas, ¼-in tp 2810 lbs; "C" sand 8915-23 perf 24 shots 8915-23 flow 3,096,000, ¼-in, cp 3070 lbs, td 10,600.

Wharton County—Oil Discovery: Floyd L. Karsten's Gus Lilie 1, 330 fr s&el 80-ac tr, ETRR sur 73, "C" sand new pay 7226, perf 16 shots 7230-34, flow 1,740,000 gas, 8/64-in, cp 2485 lbs; "T" sand new pay 7126, perf 16 shots 7140-44, flow 53.63 bbls, 42-gr, ⅛-in, gor 11,255/1, td 7404.

WYOMING WILDCAT

Carbon County — Failure: Texas Company's Unit 1, se 35-13n-92w, Baggs structure, TD 7450 ft, wtr, abnd.

WILDCAT STARTS

ARKANSAS

Nevada County: J. B. Warmack's Walker & Young 1, ne 20-14s-21w, ⅜ mi sw Steele's Waters 1, lcn.

CALIFORNIA

Kern County: Texas' Cairns 1, 14-26s-27e, Dyer Creek area, ru.

Tide Water's M. & T Inc. 27-31, 31-28s-29e, Kern Bluff area, fdn.

Fresno County: Standard's Pauson 41, 28-21s-15e, Jacalitos area, lcn.

Kings County: Trico Oil & Gas Co.'s Coe Community 74, 13-24s-22e, Trico area, ru.

Tulare County: Pacific Central's Finch 4, 31-23s-23e, drlg.

Ventura County: Bankline Oil's Black 1, 13-4n-18w, Del Valle area, lcn.

Orange County: Hiawatha Exploration's Atha 2, 13-6s-11w, Huntington Beach area, lcn.

Monterey County: C. C. M. O. Co.'s 6-G-1, 6-23s-10e, San Ardo area, building rig.

FLORIDA

Levy County: Sun's J. P. Goethe 1, swc 31-14s-17e, mim.

ILLINOIS

Clay County: B. M. Heath et al's Wormer 1, se se ne 15-2n-5e, lcn.

K & B Drlg. Co.'s Hastings 1, sw se sw 12-4n-7e, drlg.

Clinton County: T. M. Conray et al's Norman 1, ne ne sw 17-3n-1w, drlg.

Coles County: Carter's Daily-Hopper 1, nw sw nw 14-13n-7e, drlg.

Jim Early et al's Carroll 1, se nw ne 36-14n-10e, lcn.

Cumberland County: Nation Oil's Strong 1, nw nw sw 9-10n-10e, drlg.

Edwards County: R. B. Martin et al's Liddle 1, se se nw 19-1n-14w, lcn.

Gallatin County: Herndon Drlg. Co. et al's Harrington 1, nw nw nw 3-8s-9e, lcn.

Hamilton County: Natl. Assoc. Pet. Co.'s Wilson 1, ne ne se 26-5s-7e, drlg.

Madison County: Kingwood Oil's Kersmeyer 1, se se se 20-5n-5w, lcn.

Marion County: A. J. Slagter's Wendling 1, ne ne sw 28-2n-4e, lcn.

Moultrie County: Collins Brothers' Lanum 1, nw sw se 26-13n-5e, drlg.

Shelby County: Fox & Sipple's Storm 1, ne nw sw 28-11n-6e, lcn.

Wayne County: Ben Taylor et al's Nichols 1, sw nw nw 18-2s-6e, drlg.

INDIANA

C. A. Lynch et al's Clements 1, sw se nw 33-5s-14w, lcn.

KANSAS

Rooks County: Ingling & Huber's Ordway 1, nw nw ne 20-10s-18w, drlg.

Saline County: Lucien Walker's Hagg 1, nw se sw 32-14s-2w, drlg.

Stafford County: W. P. Faulkner's Fischer 1, C e/2 nw ne 8-21s-13w, drlg.

Sumner County: Fidelity Royalty's Heusel 1, ne ne nw 14-35s-1e, rur.

KENTUCKY

Daviess County: Martin Daly et al's Brooks 1, sw nw ne 6-N-29, lcn.

McLean County: Jackson & Vance's Poiles 1, ne nw nw 18-M-29, drlg.

NORTH LOUISIANA

Franklin Parish: F. Boykin King's McIntyre & O'Brien 1, c ne ne ne 1¾ mi w of Lamar fld, 32-16n-9e, dr 1200.

Richland Parish: Roy L. Fisher's Virginia Koerner 1, 36-16n-5e, lcn.

SOUTH LOUISIANA

Acadia Parish: Union Sulphur Co.'s Est. J. D. Arreneaux 1, 33-8s-3e, W. Bosco area, bldg roads Chickasawhay test.

St. James Parish: T. G. Markley's Cyrial Bourgeois 1, 6-12s-5e, Convent Dome area, 7000-ft test.

MICHIGAN

Allegan County: R. W. Cooper's Liechti 1, sw nw ne 11-2n-13w, lcn.

Newaygo County: Mich. Consolidated's State 1, c se 31-14n-11w, drlg.

Oceana County: C. W. Teater's Ryan 2, se ne nw 16-16n-16w, lcn.

Ogemaw County: Arenac Gas Co.'s Trublock , sw se se 12-21n-3e, drlg.

MISSISSIPPI

Greene County: Humble's Greene Cty. Bd. of Supervisors 2, 16-3n-7w, lcn.

NEW MEXICO

Eddy County: E. Orcutt et al's F. E. Kepple 2, se nw se 1917s-27e, machine for 900-ft red sand test.

Lea County: Neil Wills et al's Flint-Continental 2, ne se sw 29-20s-34e, lcn 3500-ft test.

OKLAHOMA

Blaine County: H. L. Hunt's Dickens 1, se nw se 26-15n-12w, lcn.

Canadian County: Fox & Fox's Simpson 1, se se sw 9-14n-5w, old well to be worked over, old td 8336 ft.

Comanche County: Beck & Johnston's Storer 1, se ne ne 10-1n-10w, drlg.

English & Franklin's Neahkah 1, ne nw sw 27-3n-10w, drlg.

Creek County: Hubble & Webb's Todd 1, ne ne sw 22-14n-7e, rur.

Hughes County: Sherrof & Apperson's Barnard 1, ne sw sw 24-8n-8e, lcn.

Kingfisher County: J. A. King's Lankard 1, ne ne se 34-17n-6w, old wildcat to be reworked, old td 8330 ft.

Lincoln County: Creekmore - Rooney's Hodges-Holland 1, sw sw se 24-14n-5e, wor.

Pottawatomie County: J. F. Smith's Walker 1, sw se sw 23-8n-2e, lcn.

WEST TEXAS

Andrews County: Shell's E. Pinson-Humble 1, 1983 ft ewl and 661 ft snl PSL 13, blk A-40, mim for 10,500-ft Ellenburger test.

Sterling County: R. R. Herrell et al's T. P. Land Trust 1, 1980 ft snl and 2310 ft ewl T&P Ry. 1, blk 31, T-5-S, lcn 2750-ft rotary test.

WEST TEXAS OUTPOST

Ector County—TXL-Ellenburger Field Outpost: Phillips Pet. Co.'s T.P. Land Trust 1-J, c se se T&P Ry. 9, blk 45, T-1-S, 1 1/16 mi ne of production, lcn Ellenburger test.

WEST CENTRAL TEXAS

Callahan County: R. B. Tamblyn Development Co.'s J. M. Harton 1, 330 ft snl and 2500 ft from m/w/w line of 317-ac tr, or 3450 ft snl and 2900 ft wel of Walter Conserve sur No. 333, lcn 1500-ft cable test.

Coleman County: Roy H. Denhart and Harvey Dunkel's Fred Haynes 1, 2000 ft snl and 345 ft wel L. L. Shield sur No. 2, lcn.

Comanche County: Hickok & Reynolds, Inc.'s John E. Leazar 1, 450 ft nsl and 870 ft ewl nw¼ sec 27, Deaf & Dumb Asylum Lands, lcn 1000-ft cable test.

Fisher County: T. A. Kirk & L. H. Choate's

T. G. Stevenson 1, 660 ft out SEc sec 5½, John Rodman sur, mi e of Longworth, lcn 4000-ft test.

NORTH TEXAS

Archer County: Bridwell's A. S. Boone 1, 1320 ft out NWc J. S. Swisher sur A-396, lcn 2000-ft rotary test.

Jack County: Kadane-Griffith Oil's J. R. Halsell 1, 4000 ft wel and 990 ft nsl McKinney-Williams sur A-426, 2900-ft test, dr 2300.

Hanlon & Buchanan's J. J. Powers 1, 233 ft out NWc W. L. Hunter sur A-966, lcn 1000-ft test.

Wichita County: D. H. Bolin et al's L. B. Slaughter 1, 990 ft nsl and 480 ft ewl blk 314, Waggoner Colony Lands, lcn 3400-ft test.

D. H. Bolin et al's H. C. Obenhaus 1-B, 150 ft out nwc of 100-ac tract, M. A. Bush sur A-24, lcn 2500-ft test.

Wilbarger County: Smiley-Norwood Dr. Co.'s H. M. Tarlton 1, 150 ft wel and 250 ft nsl blk 115, Waggoner Colony Lands, elev 1118 ft, sd 2010 ft.

EAST TEXAS

Cherokee County: Hunt's Mrs. T. G. Andrews-Pure 1, 1140 ft snl and 500 ft e of m/w/w lines 104-ac tr, or 6200 ft nsl and 9200 ft wel Jose Pineda sur A-40, 2 mi w by n Jacksonville, mim for 10,000-ft Travis Peak test.

EAST TEXAS BORDER COUNTIES

Cass County: W. B. Hinton's J. O. Betts 1, A. B. Beard sur, 4 mi se Marietta, lcn.

UPPER TEXAS COAST

Harris County: Dick Schwab's O. H. Caldwell 1, 330 s at ra fr nl 330 ne at ra fr swl 83-ac tr, A. G. Holland sur, 8500-ft test.

LOWER TEXAS COAST

Bee County: Tom Slick's Rosie E. Borroum et al 1, 660 fr wl 375 fr sl George J. Brown sur, swc 605.864-ac lse, 7200-ft test.

Cameron County: Phillips' Roloff 1, 400 fr sl on line between lots 73 & 47, Arroyo Gardens unit 1, Espirito Santo Gr, 10,000-ft test.

Karnes County: H. R. Smith-Skinner & Eddy Corp's Mrs. A. Weddington 1, on 160-ac tr, Geo. Elliott sur, set surf csg 5000-ft test.

Live Oak County: Continental's Mrs. Clay W. Burns 2, 660 fr swl 1980 fr nwl Wesley Sellman sur, 7714-ac lse, dr 9800-ft test.

Refugio County: Hecar Oil's Jamie Hynes 1, 1263 fr sl 3000 fr wl 1000-ac lse, John Malone sur ne Refugio fld, 6200-ft test.

Victoria County: Barnsdall's Union Keeram 10, 5000-ac lse, Martin de Leon Gr, 14,100 se prod at Keeran fld, 7200-ft test.

J. B. Ferguson-P. W. Micheaux's E. B. Furhman 1, 330 20-ac unit out of 477.38-ac tr, Valentin Garcia Gr, 3 mi n of Teleferner fld, 5000-ft test.

SOUTH CENTRAL TEXAS

Travis County: W. R. Bedingfield's Arthur Swenson 1, 660 fr nwl 450 fr nel 100-ac lse, L. Kimbro sur, 690-ft test.

Val Verde County: Chas. A. Maurer's John W. Ingram 1, 2030 fr sl 730 fr el ELRR Co. sur 33, blk S-2, 12,000-ac. lse, 1600-ft test.

SOUTHWEST TEXAS

McMullen County: Santa Clara Oil Co. et al's Volney M. Brown et al 2-A, 467 fr n&el GH&H sur 9, 4200-ac lse, 1500-ft test.

Starr County: George H. Echols' M. M. Garcia 2, 330 fr s&el blk 29, tr 215, porc 90, on 40-ac lse, nw Boyle fld, 4250-ft test.

Webb County: Blanco Oil Co.-Al Buchanan's Marrs McLean 2, 990 fr sl 4800 fr el Edgington sbdn Albercas Gr, waiting on rig.

CANADA

Central Alberta Plains—East Kinsella: Imperial Oil Ltd.'s Kinsella 11, lsd 7 28-47-8w4, coordinates 1,890 ft n 620 ft e, mim.

Kinsella: Northwestern Utilities' Kinsella 20, lsd 6 35-48-12w4, coordinates 658 ft s 125 ft w, lcn.

Northwestern Utilities' Kinsella 21, lsd 6 13-48-12w4, coordinates 500 ft s 650 ft w, lcn.

Northwestern Utilities' Kinsella 22, lsd 6 1-48-12w4, coordinates 110 ft s 450 ft w, lcn.

Midwestern Maps Issued

"Structural Development of the Forest City Basin of Missouri, Kansas, Iowa, and Nebraska," a set of seven maps, has been published as Preliminary Map 48 of the Oil & Gas Investigation series. Copies may be purchased from the director, Geological Survey, Washington 25, D. C., at $2 per set, and are also available for "over-the-counter" sale at the Geological Survey offices in Tulsa and Denver.

Preliminary Map 49 of the Oil & Gas Investigation series, "Map of the Berea and Murrysville Sands of Northeastern Ohio, Western Pennsylvania and Northernmost West Virginia," may be purchased from the Director of the Geological Survey at Washington for 60 cents each.

The OIL WEEKLY'S TRADING POST

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CLASSIFIED ADS . . . EQUIPMENT . . . SERVICES . . . PERSONNEL

FOR SALE

FOR SALE

■ COMPLETE POWER RIG—A REAL BUY! Cash or Terms.

1—126′ Lee C. Moore Jackknife Derrick w/ 11 foot substructure, walks, runarounds, etc.
5500′—4½″ Range II, 16.16-lb., full hole drill pipe
1—Emsco power pump, 7¼x14 with GAK Wax. engine, new
1—6¾x14 Gardner-Denver power pump w/ XHE Hercules motor, overhauled
1—Hopper 3C Drawworks
1—XHE Hercules motor, overhauled
1—Rotary table, Emsco oil bath, R. B. completely reconditioned
1—Emsco coring unit with Lincoln motor
1—B-J 150 ton hook
1—13⅜″ SDA Cameron prevented with 13″ Cameron valve
2—Sets Baash-Ross tongs, complete, late model, all lugs up to 10¾
1—Shale shaker (Made two wells)
1—6″ GS Swivel
1—4″ Kelly, 38′ long, Eue.
1—Martin Decker Weight indicator
1—Set Baash-Ross drive bushings
2—Kohler 5 K.W. light plants
2—7x12 steel tool houses
1—2½″x55′ drilling hose

All tools, accessories to make complete rig ready for service. This rig can be inspected in my yard in Alice, Texas. Phone 619, 620 or 1169-W. **Harry B. McCartney.**

■ FOR SALE: A medium size Austin Trencher A-1 shape, Crawler Type. $1,285. Write or apply in person to Mr. Roy Hofacker, Route 1, New Paris, Ohio.

FOR SALE

50— 500 Barrels
10— 1,000 Barrels
20— 5,000 Barrels
4—10,000 Barrels

Heavy A.P.I. New closed bolted type steel tanks now located at Ogden, Utah. Can quote reasonable prices in order to move from present premises at once.

JOS. GREENSPON'S SON PIPE CORP. National Stock Yards, St. Clair County, Ill.

Immediate Delivery
GENERATORS—10 KW

Limited quantity Gasoline Engine Driven Generators, 120/240 volts, 60 cycle AC, single phase. Completely metered and with remote starting. Powered with the famous Willys "Jeep" engine. Complete unit standard parts. Unit is self-contained and mounted on skids with weatherproof shields. Ideal for houseboats or camp lighting. $1000.00 F.O.B. our warehouse, Houston. Harrison Equipment Company, 1422 San Jacinto, Houston, Texas. Wire or phone.

FOR SALE

FOR SALE

2—100 KW KVA General Electric Generators with Exciter and panel switch boards.

SERVICE SUPPLY COMPANY
Greggton, Texas

■ **Fluorspar Mines,** including complete modern mill with crushers, screens, ball mill, water softener, classifier, 24 flotation cells, thickener, filter, dryer, bins, F. M. Diesel Electric Generator, warehouse, good roads, etc. Now producing acid, ceramic and metallurgical grades. Reserve supply of ore unlimited. Location, Hudspeth County near Van Horn. Western Fluorite Co. (Owners). G. A. Cooper, P. O. Box 2340, San Antonio, Texas.

■ FOR SALE: 240-acre lease with production. Wells operated by electricity. Chalk rock. Several more locations can be drilled. For price address: W. J. A., 516 Egan St., Shreveport, La.

HELP WANTED

■ Graduate Chemical or Mechanical **Engineer** with experience in gasoline or recycling plant. Give age, experience and educational qualifications in first letter. Address: **Box 14, c/o** The Oil Weekly, Houston, Texas.

SITUATION WANTED

■ Veteran, graduate Petroleum **Engineer, 32,** seven years experience as driller and petroleum engineer. Desires position with headquarters in Houston. Address: Box 13, c/o The Oil Weekly, Houston, Texas.

■ Sales engineer, college education, 15 years representing manufacturers in California calling on all branches oil industry, desires connection with Mid-Continent or eastern firms wanting representation in California. 4444 Heather Road, Long Beach 8, California.

SERVICES

■ For Rent: 10,000 ft. of 3½″ OD, internal flush, twin pin, **used excellent, for rental.** Petroleum Pipe and Supply Company, C 4-5045, Houston, Texas.

NOTICES

OIL PRODUCTION

wanted. Property that will make from $20,000.00 to $200,000.00 PER MONTH.

W. K. MANN OSAGE HOTEL,
Arkansas City, Kansas

■ WANTED: Operators to finance and further develop proven and semi-proven oil and gas properties in Montana.

Hamilton & Hamilton, Inc.
Box 1605, 535 Ford Bldg.
Great Falls, Montana.

Perpetually participate in coming Florida oil development by owning income producing fee mineral rights. Geologically selected, on geophysical prospects, leased to major companies, at predevelopment prices. Write **Petroleum Geologist,** Box 1701, Houston, Texas.

LEASES, DRILLING, ACREAGE, ETC.

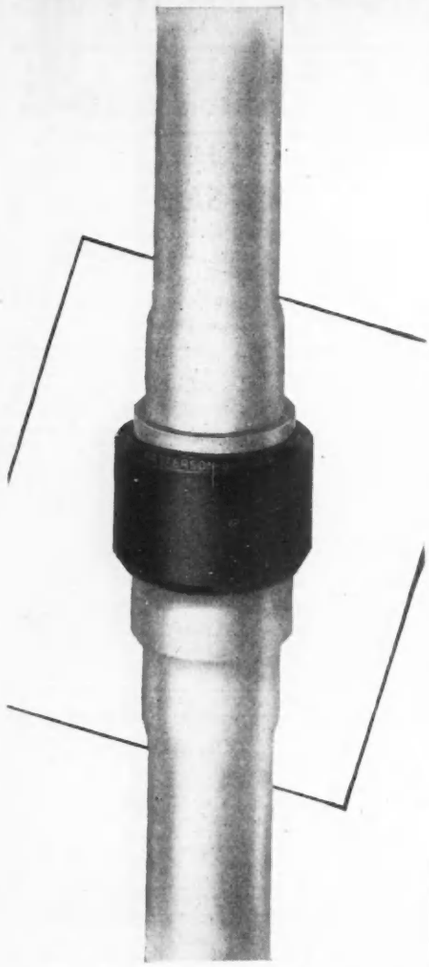
■ ASSOCIATE WANTED on 2000 acres, West Texas; Seismograph High; well recently drilled on edge produced some oil at 3000′. J. Bell, 1907 Hope St., Dallas, Texas.

■ FOR LEASE: Palangana, 748 acres between Piedras Pintas Field and Salt Dome; early new development arranged for. R. C. Singer, 1125 Florida Street, Corpus Christi, Phone 2-8837.

POSITION WANTED BY SERVICE MEN

■ Ex-Navy man, qualified as buyer, purchasing agent, office manager, experience with major oil tool supply and machine companies in Los Angeles, Tulsa, Wichita, Shreveport, Arkansas, 32 years of age, immediately available for position. M. L. Sheehan, P. O. Box 584, West Los Angeles Station, Los Angeles 25, California.

"Best Bet Yet"



Cut Metal-to-Metal Contact

These oil-proof, insulating, wear-resistant, plastic tubing protectors are an integral part of the tubing collar. Made in all sizes, they prevent the metal-to-metal contact that causes many expensive "wet" jobs in pumping wells. Without this contact, the collars do not wear holes in the casing.

See Composite Catalog

Patterson-Ballagh TUBING PROTECTOR

LOS ANGELES HOUSTON 10 NEW YORK 6

SQUEAKS from the BULL WHEEL

We Ask You

Breathes there a man with soul so dead,
Who has never spun around and said,
M-M-M-M-M! What gams!

So She Struck Him

"Just suppose we wives should go on strike."

"Go right ahead. I know a peach of a strike-breaker."

For Men Only

"My gal wants to dye her hair. You have any for sale?"

"Yes, sir. In this bottle is dye that makes blonds and in this bottle is dye that makes brunettes."

"And what's in that other bottle?"

"Oh, that's gin, which makes both."

This Curious World

A sailboat is called "she" because it makes a better showing in a breeze.

"My mother and father were first cousins," the new pupil explained to the teacher, "which is why I look so much alike."

There's a very definite reason why Mary lets all the boys kiss her—she once slapped a man who was chewing tobacco.

Many a brilliant band leader plays nothing but second fiddle at home.

A drunk, reading the sign, "Don't mix gasoline and liquor," scribbled on the bottom, "Okay, I wouldn't like it, anyway."

She was the belle of the town until somebody tolled on her.

She laughed when I sat down to play—how the heck did I know she was ticklish?

A man-about-town was married recently, which makes him a were-wolf.

Where do all the little horses come from if all the big horses say "neigh?"

Sign in a restaurant: Wanted: Man to wash dishes and two waitresses.

Who remembers the good old days when you could kiss a girl and taste nothing but girl?

Well, Doggone!

After a hard day's trip on a bus, during which there were numerous stops, the old lady complained to the driver:

"Say, young man, seems like we stopped at every telegraph pole."

"Well, ma'am, this is a Greyhound bus."

Simple Problem

"Doctor, I'm a nervous wreck because I can't get any sleep. I snore so loud I wake myself up."

"In that case, I suggest you sleep in another room."

Lower Upkeep

"Now that the war's over, I'd like to get abroad for a year or two."

"Take my advice and marry one for keeps."

No Strike Here

"It's a girl, Sultan."

"Tarnation! I wanted a boy."

"Patience, O Sultan. There'll be three more this afternoon."

He'll Feel All Right

"No, I couldn't possibly come to your party. I haven't a thing to wear."

"Oh, that's all right. I'll get you a blind date."

Sign of the Times

"Get out—get out!" moaned the spook in the haunted house.

"Where are you?" quavered the intruder. "I can't see you."

"Yeah, I know, bub—the sheets ain't back from the laundry."

Weaker Sex

She drinks and smokes
And tells dirty jokes;
She'll fight a cop
For a big loud boo!
She does many things
That she oughtn't to;
But dadgummit, she's my grandma
and I love her just the same.

Poet's Nook

If louses are lice,
And mouses are mice,
Would you say that a guy
With two spouses had spice?

You can now purchase copies of
Electrical Logs
on almost every well on the Gulf Coast
Wildcats or Field Logs
Old Logs and New Logs
Texas or Louisiana Gulf Coast
CAMBE LOG LIBRARY
206 Shell Bldg. Houston, Texas

New
TEXAS LEASE FORM
IN STOCK FOR IMMEDIATE SHIPMENT
Form 311-46 Texas

This 4 page lease form, designed by leading attorneys and lease men, is a "Producers 88" form but **does not** contain the war clauses. Pooling clause is included.

Write for Sample or Order By Form Number

STOCK FORM DEP'T.
GULF PUBLISHING CO.
P. O. BOX 2608, HOUSTON 1, TEXAS

FRANK R. CLARK, district geologist with The Ohio Oil Company at Tulsa, retired April 1 after 23 years of continuous service. He served as secretary of the American Association of Petroleum Geologists in 1931 and was elected president of the association in 1933. Born at Grantsville, Utah, he was graduated from the University of Utah in 1910 and worked for S. Pierson & Son Ltd., of Mexico in 1910-1911. He was with the USGS from 1911-1919 and chief geologist for the Wiser Oil Company, Sistersville, W. Va., from 1919-1923, before joining Ohio in 1923. He was made a vice president of Ohio in 1936. Clark plans to make his headquarters at Tulsa and will engage in geological consulting work.

Frank R. Clark

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C. E. MORLAN has been named vice president and general manager of Patoil Corporation, succeeding Coy Hogg, who has resigned to become professor of petroleum at Marietta College. Morlan was formerly superintendent of West Texas properties for Cities Service Oil Company, one of the owners of Patoil. He moved to the New York office in 1945 and has since been active in organization and operating work.

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V. R. G. WILBUR of Pasadena, a member of the board of directors of the California Stripper Well Association since its organization, was elected president of the statewide group. **EDWIN P. CRAIL,** president of Victory Oil Company; **EARLE F. DEMOND** and **JACK HERLEY** were elected vice presidents. **THOMAS M. WORK** was reelected secretary-treasurer, and **RICHARD FENTON,** executive vice president since the association was formed, was retained in that office. New directors are Wilbur, **L. A. DONNELLY, WILBUR B. HARRISON, DECATUR MITCHELL, MILTON H. PHILLEO** and **LLOYD M. WILLIS.**

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R. T. GOEBEL, recently released from service with the Navy, has joined the geological staff of Kingwood Oil Company at Evansville, Ind.

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DON F. GALLOWAY has been appointed legal assistant to the general secretary of the Mid-Continent Oil & Gas Association at Tulsa. Galloway, who has been released after four years' service with the Navy, is a graduate of the University of Iowa Law School and has specialized in administrative and tax law.

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M. C. GREEN, Wichita, Kansas, has organized the Green Contracting and Engineering Company, Inc., and has announced that **T. R. GARRETT** will serve as vice president and **LAWRENCE WEIGAND** as secretary. Green, who will be president of the organization, has announced that the firm will serve the production, refining and transportation facilities of the oil industry throughout the Mid-Continent region.

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E. F. (JACK) ALLEN has resigned as assistant chief national bank examiner in the office of the Comptroller of Currency, Washington, D. C., to join the First National Bank and Trust Company of Tulsa as a vice president. Born in Missouri, Allen attended the University of Missouri and after discharge from the Navy in 1919 became assistant cashier of the Peoples National Bank of Clinton, Mo. In 1920 he became cashier of the First National Bank of Louisburg, Kansas, and was active managing officer of this bank until 1923 when he resigned to become a national bank examiner in the Tenth (Kansas City) Federal Reserve District. Advancements took him to the New York district where the examination of some of the nation's largest banks became his job. For the past year Allen has been in the office of the Comptroller of the Currency, holding the title of assistant chief national bank examiner, with supervision over 1400 banks in three federal reserve districts.

E. F. Allen

DR. W. H. TWENHOFEL of the University of Wisconsin spoke before the Oklahoma City Geological Society on "The Geology of the Region of the Gulf of St. Lawrence." Dr. Twenhofel appeared under the sponsorship of the distinguished lecture committee of the AAPG.

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GERALD H. BARTLEY, geologist with 44 months of service in the Navy, has rejoined the Midland staff of the University of Texas' land office.

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ISH McKNIGHT, landman for Woodley Petroleum Company in West Texas, has resigned to operate independently with headquarters at Midland, Texas.

• • •

E. A. McCULLOUGH, former West Texas geologist for American Trading & Production Corporation and previously with Phillips Petroleum Company, has joined Sunray Oil Corporation as manager of the new land and geological district office at Midland.

W. T. DABBS, district superintendent, and **B. H. C. STOVER,** district chief clerk, are in charge of new district headquarters in Columbia, Miss., for Humble Oil & Refining Company's production department. They were transferred from similar positions with Humble at Eucutta District headquarters, Waynesboro, Miss. **S. E. WALLETTE,** former farm boss at Humble's Bayou Sale District, Franklin, La., has been made district superintendent of the Eucutta District, and **J. M. BARBER** has been transferred from the post of district chief clerk at the Heyser Gas Plant in the production department's Southwest Texas Division to the position of district chief clerk in the Eucutta District.

• • •

S. H. GRINNELL, superintendent of service and maintenance for Union Oil Company of California, has left the firm after 28 years to become manager of operations for Pacific Airmotive Corporation. He is succeeded by **H. E. GILES,** former general foreman of the service and maintenance department at Orcutt, Calif.

Make sure it's a
TIGHT JOINT!
● One joint failure could cost your company many dollars in lost production and fishing time. The basic factors involved in making tight joints are (1) proper machining and threading and (2) proper joint make-up in the field. The threads of Jones Sucker Rods are made uniformly accurate on automatic threading machines.
Jones' persistent educational program on the care and handling of sucker rods have prevented thousands of unnecessary pin and coupling failures. Our booklet entitled "The Care and Handling of Sucker Rods" is available for the asking.
Jones Sucker Rods, today, are the finest and strongest that a half century of experience can produce. Use them on your next pumping operation and you can be sure that every joint is a tight joint.
THE S. M. JONES COMPANY
(Subsidiary of Buffalo Bolt Company)
General Office and Factory: Toledo, Ohio
Sales Office: McBirney Building, Tulsa, Okla.
Export Office: 50 Church Street, New York, N. Y
JONES
SUCKER
RODS

MEN IN THE INDUSTRY NEWS

MARTIN J. CONWAY, special engineer for 20 years with Lukens Steel Company at Coatesville, Pa., will leave that concern May 1 to become sales representative for a number of manufacturers selling to the steel and petroleum industries in Delaware, New Jersey, New York and Pennsylvania. He received training as a mechanical and chemical engineer at Hanely and Oxford, England, and came to the U. S. in 1920 after assisting in the design of a bitumen distillation plant in Madagascar, a tar distillation plant in India, and a low temperature carbonization plant in England. From 1920 to 1923, was fuel engineer for Pittsburgh Crucible Steel Company, later joining Wheeling Steel Corporation in the same capacity. As special engineer for Lukens Steel Company, he made special metallurgical investigations in Europe in 1928. He was in charge of producer gas plants, boiler plant operation, furnace and fuel efficiency, distribution, engineering work of special interest dealing with both fuel and metallurgy.

Martin J. Conway

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F. EMMANUELLI of Paris, France, president of Societe Nationale de Materiel pour le Recherche et l'Exploitation du Petrole (MAREP), was in Houston last week with a party of French engineers inspecting oil field equipment. Others in the party were **G. SEMENOFF,** engineer with Societe Cherifienne de Petrole in French Morocco; **M. MARATIER,** drilling contractor, and **M. SIMULIN,** engineer with Societe Nationale de Petroles d'Aquitaine (SNPA). MAREP was organized about six months ago as the purchasing group for eight French oil societies.

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E. F. GAHAN, 500 Fifth Avenue, New York, has been named export representative for Houston Oil Field Material Company.

JOSEPH ZABA has opened a petroleum engineering consulting office in the First National Bank Building, Houston. His work will include consulting on drilling and production problems, acting in an advisory capacity in questions dealing with planning for and management of drilling and production properties, subsurface studies and correlations, valuations of oil and gas properties and estimates of possibilities of undeveloped acreage. A native of Poland, he arrived in this country in 1924. His experience includes 21 years in the oil fields of Texas and Louisiana. After advancing from roustabout to material foreman, he was transferred to the general office and became active in different phases of petroleum engineering. This work was later broadened to include subsurface work in selection of new locations and supervision of field drilling and production operators. During the last few years he prepared reports on appraisal of producing properties and estimates of prospects for development. He spent 18 years with the Rio Bravo Oil Company.

Joseph Zaba

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ROGER H. SHERMAN has been elected vice president of Creole Petroleum Corporation, an affiliate of the Standard Oil Company (N. J.). Sherman was formerly an assistant manager of the company. Sherman has been associated with Creole and other affiliated companies of the Standard company for more than 18 years. He has spent the last 13 years in Venezuela directing Creole's geological activities. Prior to his service in Venezuela, Sherman spent several years in Mexico as a geologist with the Huasteca Petroleum Company. Sherman is 42 years of age and is a graduate of University of Colorado, where he majored in geology.

E. G. McALEXANDER and **M. W. (PAT) McALEXANDER,** both of Houston, have organized the Scotch Oil Corporation to operate in Texas.

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DONALD P. KROTZ has been appointed assistant to the president of the California Research Corporation, Standard of California subsidiary. Following graduation from Stanford University as a chemical engineer, he joined Standard at the Richmond refinery. After 12 years in engineering, maintenance, and distillation operations there, Krotz in 1938 was transferred to Standard's Department on Organization in the San Francisco home office.

Deaths

H. E. MARSH, 47, head of the land department of the mid-continent division, Amerada Petroleum Corporation, Tulsa, died April 3. A native of North Carolina, Marsh served in the Navy during World War I and was a graduate in geology from the University of North Carolina. He joined Amerada in 1920, working in the geological department in Oklahoma and Kansas. In 1921 he was transferred to the land department in the Mid-Continent area and in 1926 moved to Fort Worth as manager of Amarada's land department. He returned to Tulsa in 1938 as head of the land department of the Mid-Continent area, which position he held at the time of his death.

H. E. Marsh

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CLEMENT R. LANIER, 64, East Texas operator, was fatally injured April 6 when struck by an auto near his Teague residence.

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A. J. (JACK) PFISTER, SR., 66, Tulsa oil man, died April 9. A native of New York, Pfister went to Tulsa when it was first being recognized as an oil center and worked for Midco Oil Corporation. He later worked with Bell Oil and Gas Company before joining Akin Gasoline Company in 1927. He retired from the company in 1938 and settled on a ranch north of Bentonville, Ark., to recover his health. In 1941 he returned to Tulsa and joined the Atlas Gasoline Corporation, of which he was sales manager at the time of his death.

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JOHN HOLLIHAN, 63, retired secretary of the Sinclair Prairie Oil and Gas Company, died at Independence, Kansas, April 8 of a heart attack. He was associated with the company for 34 years, retiring in 1937.

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ROBERT CHENEY HART, pioneer oil operator, died March 30 in London. He was formerly British vice consul in Ciudad Bolivar and for many years was an operator in Venezuela, where he was president of the United Venezuelan Oil Company, Ltd. Hart was active in the Mexican oil fields as early as 1910. He drilled several wells in North Texas before the last war.

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R. C. ELMORE, 53, West Central Texas operator for 20 years, died April 4 at Fort Worth. He was a native of Trenton, Mo.

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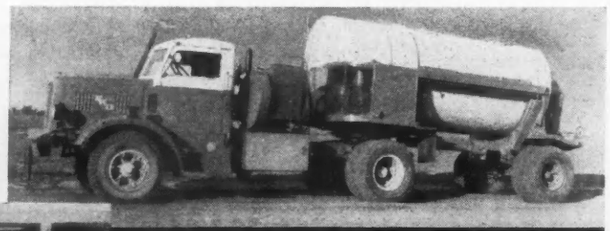
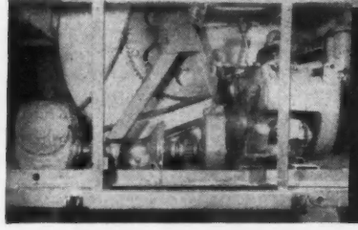
ARTHUR R. CAMPBELL, 67, executive vice president and secretary-treasurer of the Louisiana - Arkansas division of the Mid-Continent Oil and Gas Association, died of a heart attack in Shreveport April 7. Honorary pallbearers included members of the Louisiana-Arkansas division executive committee. Campbell moved to Shreveport in 1919 and engaged in the drilling business in North Louisiana and South Arkansas as an associate of the late **H. C. BREWSTER.** He was named executive secretary of the Louisiana - Arkansas division in 1935, succeeding the late **JOSEPH B. ELAM.**

Arthur R. Campbell

OIL WELL CEMENTING





Another Service Responsibility for WISCONSIN Air-Cooled ENGINES

Cementing oil wells, as every operator knows, requires the most dependable equipment possible to secure. The deeper the oil sands, the greater the quantities of cement required . . . mixed rapidly and pumped into the well with equal speed and constancy. Pumping, once started, must continue without interruption due to the higher temperatures at lower depths.

In this exacting and vitally important job of mixing and pumping cement, the Halliburton Oil Well Cementing Company has chosen the Wisconsin Model VF4 Air-Cooled Engine for powering their equipment . . . an operating responsibility that these rugged, heavy-duty engines are well qualified to assume.

WISCONSIN MOTOR Corporation
MILWAUKEE 14, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

WRITE TO HARLEY SALES CO.
510 Atlas Building, Tulsa, Oklahoma
M & M Building, Houston, Texas
Oil field distributors for Wisconsin Engines and all types of utility units.

Equipment Suppliers Schedule General Meeting at Tulsa

A general membership meeting of the Petroleum Equipment Suppliers Association will be held at the Mayo Hotel in Tulsa, April 23 and 24, the first such meeting since November, 1943.

Committee meetings and discussion of current problems are scheduled on April 23. From 9 a.m. to 10:30 a.m. the sales accounting committee will meet. John H. Lollar, Jr., Republic Supply Company, chairman, will lead discussion. The program for the remainder of the day includes: 10:30 to 12 noon, transportation committee meeting, H. C. Witt, Jones & Laughlin Supply Company, chairman; 2 to 3:30 p.m., sales tax committee meeting, Donald Brown, Bethlehem Supply Company, chairman; 3:30 to 5 p.m., personnel and labor relations committee meeting, Thomas M. Mobley, Hughes Tool Company, chairman.

A general membership meeting will be held from 9:30 a.m. until noon April 24 with the board of directors meeting from 2 to 4 p.m. Guests will be entertained at the Southern Hills Country Club on the night of April 24 by Tulsa members.

Hugh Glen of Los Angeles, California, Emsco Derrick & Equipment Company, is association president.

Stewart, Stevenson Services Opens Two Texas Branches

Stewart & Stevenson Services, Houston, has opened two new sales and engineering branches in Texas. The new Dallas branch, under the direction of Charles L. Ward, will serve Central and North Texas with all types of both General Motors Diesel and Continental Red Seal gas, gasoline and butane power plants fabricated by the Houston plant.

The McAllen branch, managed by Richard N. Conolly, will serve Southwest Texas and the Rio Grande Valley. The company, since its formation in 1938 as an outgrowth of C. Jim Stewart & Stevenson, has expanded its services to include the designing, engineering, building and installing of power equipment for the oil production industry.

Wiggins Tank Roofs Sales and Service Added by Wyatt Company

Wyatt Metal & Boiler Works, Houston and Dallas, has arranged with General American Transportation Corporation, Chicago, exclusive licensers of the widely known Wiggins tank roofs, for the sale, fabrication, erection and servicing of this equipment in eight states.

The Wyatt license territory includes Arkansas, Oklahoma, New Mexico, Texas, Louisiana, Mississippi and Alabama, and part of Florida.

Sale of Falcon Products Firm Announced by Republic Supply

Republic Supply Company of California has announced the sale of Falcon Products, Inc., to A. R. Loud and H. F. Schlittler. Loud is the owner of the H. W. Loud Machine Works of Pomona, Calif., and will become the president of the newly purchased firm, which will continue under the management of Schlittler as vice president and general manager. Headquarters will be moved from Los Angeles to Pomona to effect a consolidation of the manufacturing, sales, and operational organizations of Falcon Products, Inc., and will facilitate a considerable expansion of the Falcon line.

Regan Office Moved

The Regan Forge and Engineering Company, San Pedro, Calif., announces the removal of its export office to 19 Rector Street, New York City, where the Hunt Export Company will act as Regan's export representatives.

Hunt Export Named Foreign Distributor for Regan Company

Regan Forge and Engineering Company has named Hunt Export Company as export distributor for its products.

Formed in April, 1945, Hunt Export represents Hunt Tool Company and a number of other manufacturers of oil industry equipment in countries outside the United States.

Hunt Export maintains offices at 19 Rector Street, New York City; 1945 St. Bernard, Houston; and Avda. Pte. R. Saenz Pena 832, Buenos Aires, Argentina.

AMERICAN ROLLER BEARINGS HEAVY DUTY

When we say *super service*, we mean just that! Because AMERICAN SUPER HEAVY DUTY ROLLER BEARINGS are *specially built* for applications requiring *super* strength . . . *super* performance . . . *super* endurance. They are not just "stock" bearings. Often they are designed to exact specifications for the job they are required to do. Their vital, extra capacity to render continuous 24-hour-a-day performance in the heaviest equipment built, under the most adverse service conditions to be encountered in modern industry, is the reason why, for more than 25 years, AMERICANS have been first choice with manufacturers and designers of heavy industrial and oil country machinery. Once adopted, no manufacturer has ever had to switch from AMERICANS. Write today for complete technical details.

AMERICAN ROLLER BEARING COMPANY
PITTSBURGH PENNSYLVANIA
Pacific Coast Office: 1718 S. Flower St., Los Angeles, Calif.

AMERICAN
Heavy-Duty ROLLER BEARINGS

MANUFACTURERS' NOTES

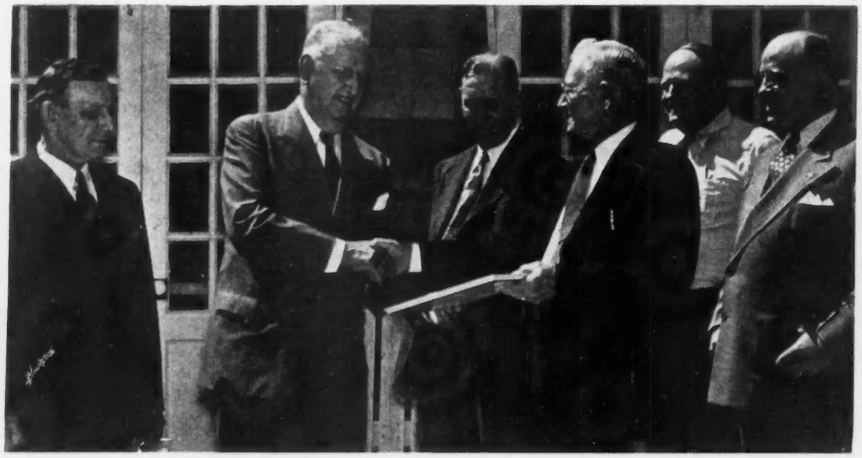
American Instrument Society Holds First Regional Session

The Instrument Society of America held the first regional conference in Detroit, April 4. The program included: "Unusual Control Problems," by Dr. John Grebe, Dow Chemical Company; "Diaphragm Control Valves, by Bruce Irwin, Hammel-Dahl Company; "Instrumentation Problems of the Metals Industry," John R. Green, Brown Instrument Company; "Piston Ring Gauging Instruments," Paul Exline, Gulf Research & Development Company; "How Special Metals Solved Instrument Problems," Robert W. Carson, Instrument Specialties Company; "Flow Rate Metering Enters a New Technical Era," Kermit Fischer, Fischer and Porter Company; "Non-Destructive Testing of Materials by Means of Supersonics," Harry Shaper, Brush Development Company, and "Boiler Control," P. S. Dickey, Bailey Meter Company. Joint hosts of this meeting were the Detroit Instrument Society and the Wayne County Society of The Instrument Society of America.

THE OIL MAN'S CALENDAR

APRIL	
17–19	Natural Gasoline Association of America, Annual Convention, Dallas, Baker Hotel.
18–19	National Petroleum Association, Semi-Annual Meeting, Cleveland, Ohio, Hotel Cleveland.
23–24	Petroleum Equipment Suppliers Association, Membership Meeting, Tulsa, Mayo Hotel.
29–30	And May 1, Independent Petroleum Association of America, Mid-Year Meeting, Houston, Rice Hotel.
MAY	
7– 8	American Gas Association, Natural Gas Dept., Cincinnati, Hotel Gibson.
7– 9	Petroleum Industry Electric Association, Annual Convention, Tulsa.
7– 9	National Association Corrosion Engineers, Kansas City, Missouri, President Hotel.
17–18	Southwestern District, Production Division, API, Spring Meeting, Shreveport, La., Washington-Youree Hotel.
23–25	National Oil Scouts and Landmen's Association, Annual Convention, Jackson, Mississippi. Hotel Heidelberg.
28–29	American Petroleum Institute, Directors' Meeting, Fort Worth, Blackstone Hotel.
JUNE	
6– 7	Mid-Continent District, Production Division, API, Spring Meeting, Oklahoma City, Skirvin Hotel.
7– 8	Kentucky Oil and Gas Association, Lexington, Ky., Hotel Lafayette.
13–14	Eastern District, Production Division API, Spring Meeting, Pittsburgh, Pa., William Penn Hotel.
17	FPC Gas Hearing, Washington, D.C.
27–28	Pennsylvania Grade Crude Oil Association, Annual Meeting, Pittsburgh, William Penn Hotel.
OCT.	
7–12	American Gas Association, Annual Convention, Atlantic City, N.J.
16–18	Texas Mid-Continent Oil and Gas Association, Houston, Rice Hotel.
NOV.	
11–14	American Petroleum Institute, Annual Meeting, Chicago, Stevens Hotel.

Employes Honor Lufkin Foundry President



W. C. Trout, president of Lufkin Foundry & Machine Company, Lufkin, Texas, was honored on his 72nd birthday April 6 when more than 800 employes presented him with a bronze plaque in appreciation of his "thoughtful, friendly and understanding leadership for more than 40 years." Above, Trout accepts the plaque from H. W. Ragland, veteran boilermaker who on that day celebrated 40 years of service with the company. Others in the picture, left to right, are Dutch Oberpriller, moulder; Jesse Belote, machinist; C. B. Ragland, trailer division superintendent; and Al. Cudlipp, vice president, all veterans of from 25 to 40 years with the company.

Trout went to Lufkin in 1905 and began as a manufacturer of sawmill machinery, later entering the oil field equipment field. Under his guidance the company progressed from a small repair shop to one of the foremost oil field equipment manufacturers in the Southwest.

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